

AMATEUR RADIO AMATEUR RADIO AMATEUR RADIO AMATEUR RADIO

APRIL, 1957

MAGRATHS

AUSTRALIA'S LEADING
RADIO HOUSE FOR
**VITAL TELEVISION
COMPONENTS AND PARTS!**

We are Australian Agents for these ENGLISH T.V. Manufacturing Companies—Whiteley Electrical Ltd., Sydney S. Bird and H.V. Enthoven. To keep abreast with the latest T.V. developments in Australia, we invite you to register your name with us. We will then mail you progressive reports on our newest components.

Our comprehensive range of TV parts and components includes:—

- PICTURE TUBES
- OUTDOOR AND INDOOR ANTENNAS
- VIDEO AND I.F. COUPLING AND TRAP COILS
- NEUTRALISING AND COMPENSATION COILS
- AERIAL AND MIXER COILS
- FILAMENT CHOKES AND TRIMMER CONDENSERS
- POWER AND I.F. TRANSFORMERS
- I.F. CHASSIS ASSEMBLIES, ETC.

ILLUSTRATED HERE (top to bottom)
LINE E.H.T. CHASSIS ASSEMBLY
DEFLECTION AND FOCUSING ASSEMBLY
TURRET TUNER

All prices on application.

J. H. MAGRATH & CO. PTY. LTD.

1st FLOOR, 208 LITTLE LONSDALE STREET,
MELBOURNE, VIC. Phone: FB 3731

Open Saturday mornings, too.

RADIO
RADIO
RADIO
RADIO
RADIO
RADIO
RADIO
RADIO
ONE SHILLING
RADIO



Registered at G.P.O., Melbourne, for
transmission by post as a periodical

AMATEUR RADIO

"HAM" RADIO SUPPLIERS

(KEN MILLBOURN, PROP.)

5A MELVILLE STREET, HAWTHORN, VICTORIA

North Balwyn Tram Passes Corner, near Vogue Theatre.

Note New Phone Number: WM 6465

Money Orders and Postal Notes payable North Hawthorn P.O. Packing Charge on all goods over 10 lbs. in weight, 5/- extra.

NOTE THESE VALVE PRICES

Look at these Bargain Priced NEW VALVES—

1B5 .. 2/6	6K6 .. 7/6	6Y6 .. 7/6	834 .. £1
1K4 .. 5/-	6K7 .. 10/-	7A6 .. 5/-	954 .. 7/6
1K5 .. 10/-	6K8G .. 10/-	7C5 .. 10/-	955 .. 7/6
2A3 .. 10/-	6K8GT .. 15/-	7C7 .. 2/6	957 .. 10/-
2A5 .. 10/-	6L7 .. 10/-	7W7 .. 5/-	EF50 and
3Q5 .. 5/-	6N7 .. 10/-	12SG7 .. 10/-	Socket 6/6
6AC7 .. 3/11	6N8 .. 15/-	12SJ7 .. 10/-	EL35 .. 10/-
6AG7 .. 15/-	6Q7G .. 5/-	12SK7 .. 10/-	EN31 .. 10/-
6B8 .. 15/-	6R7G .. 10/-	12SN7 .. 12/6	VR90 .. 15/-
6C8 .. 7/6	6SC7 .. 10/-	12SQ7 .. 2/6	VR100 5/-
6E5 .. 10/-	6SF7 .. 12/6	12SQ7GT 2/6	VR101 5/-
6F6 .. 10/-	6SH7 .. 5/-	12SR7 .. 12/6	VR102 5/-
6G8G .. 10/-	6SJ7GT 12/6	807 .. 20/-	VR103 5/-
6H6 .. 5/-	6SK7GT 12/6	815 .. 50/-	VR105 12/6
6J6 .. 12/6	6S87 .. 12/6	829B .. £5	VR150 12/6
6J8G .. 10/-	6T7 .. 10/-	832 .. 50/-	VT50 .. 2/6
	6SH7G 5/-	832A .. 70/-	VT52 .. 10/-

English VT127 (4v. power pent., 20 watt, octal base), 4/11
Full stocks of New Valves available. Prices on request.

Following list are ex Disposals, guaranteed—

1K5 .. 5/-	6C5 .. 10/-	6SJ7G 10/-	12K8 .. 10/-
1K7 .. 5/-	6D6 .. 5/-	6SK7G 10/-	1625 .. 15/-
1L4 .. 5/-	6C8 .. 10/-	6SL7 .. 12/6	25AC5 10/-
1S5 .. 10/-	6H6 .. 5/-	6U7 .. 10/-	CV92 .. 5/-
1T4 .. 10/-	6L7G 7/6	12A6 .. 10/-	EF50 .. 3/6

Genemotor Power Supply, Type 16 SCR522, 24v. input, 150v. and 300v. output at 300 Ma. Includes relay, voltage regulator, etc. A gift at £1. Too heavy for postage. Packing 5/-.
Genemotors, Windcharger, 19v. 3.8 amp. input, output 405v. 0.095 amp. When 12v. input applied, 250v. output. £3/5/0
APX1 12v. and 24v. Shunt Motors, reversible. Ideal for small beams. Works on AC .. £2/5/0

BC966A L.F.F. Oscillator Unit, contains one 7193, small split stator condenser (15 x 15 p.F.), condensers, resistors, 25/-
SCR522 Relays, 5,000 ohm resistance .. 20/-
Relays—S.P.D.T., 24 volt, 3,500 ohms .. 7/6
S.P.D.T., 24 volt, 6,500 ohms .. 7/6
12 volt, 250 ohms .. 7/6
P.M.G. Type, 3,000 ohms .. 7/6
P.M.G. Type, 500 ohms .. 7/6
P.M.G. Type, 500 plus 500 ohms .. 7/6

Midget Ceramic Trimmers, 3 to 55 p.F. .. 1/-
Ceramic Yaxley Switches, 2-way 3-position .. 7/6
Ceramic 832 Valve Sockets, 522 type .. 12/6
Impedance Matching Unit containing 30 ft. 50 ohm co-ax, 17/6
Neon Indicators, 230v. AC, BC base .. 2/6
N.E.2 Miniature Neon Tubes, ex Command Receivers .. 2/-
APX1 Chassis Top Deck, Contains 28 ceramic 7-pin miniature valve sockets, Host of condensers, resistors. A very good buy at 45/-. Postage 5/-.

Meters—0-0.35 and 0-1 Amp. R.F., FS6 and 101 type .. 25/- ea.
Meters—0-10 Ma. 2" round, Triplette, new .. 17/6
Meters—0-30 Ma., 2 1/2" round type, American .. 40/-
Meters—0-100 Ma. 2" square, scaled 0-300, new .. £1
Meters—0-150 Ma., 2" square, new .. 27/6
Meters—0-2.5 Amp. R.F., 2" square type, new .. 15/-
Meters—0-40 amp. A.C. 2 1/2" round type .. 25/-
Meters—0-20v., A.C. 2 1/2" round type, new .. 25/-

American Loran Receiver R9A-APN4, 16 valves. Part of Loran Indicator. Equipment contains 3 6B4s, 1 5U4, 1 VR105, 2 2X2s, 1 6SJ7, 4 6SK7s, 1 6H6, 1 6SN7, 1 6SL7, 1 6SA7, lots useful parts. New in case. No packing charge. Gift at £7/10/-
AT5 Transmitters, less valves and dust covers .. £3
SCR522 American Transceiver, Frequency: 100 to 150 Mc. In clean condition, less valves .. £10
AR8 Vernier Dials, low and high freq. Brand new .. £2
Calibration Perspect Dial only .. 10/- each
SCR522 Receivers, less valves .. £5
SCR522 Transmitters, less valves .. £5
AT5 Transmitters with valves and dust covers, contains three 807s and two 6V6s .. £5/17/6
108 Mark III. Portable Transceiver, complete with valves, less headphones, aerial and microphone .. £7/10/0
Howard Jones 10-pin Plugs and Sockets .. 12/6
Howard Jones 21-pin Plugs and Sockets .. 12/6
Co-ax Cable, 50 ohm, any length .. 1/9 yard
Co-ax Cable, 100 ohm, any length .. 2/- yard
Co-ax, Indoor type, cotton covered .. 1/- yard
Co-ax Plugs and Sockets, American Ampenol .. 5/- pair
Co-ax Right-Angle Plugs, American Ampenol .. 2/6 each
English Carbon Mike Transformers, new .. 5/-
English Filter Chokes, small type, 40 Ma., 100 ohm resist, 3/6

LARGE STOCK OF CRYSTALS

915 Kc. Crystals .. £3 each
3.5 Mc. Marker Crystals, latest miniature type complete with socket .. £2/10/0
Amateur Band Crystals, any frequency .. £2
Gold Plated Marker and Commercial Crystals, price on request.
Delivery in seven days.

Following is a list of Crystal Frequencies available for immediate delivery. £2 each—

2081 Kc.	5835 Kc.	6175 Kc.	6775 Kc.	7162.8 Kc.
2103.1 Kc.	5437.5 Kc.	6200 Kc.	6800 Kc.	7165 Kc.
2112.5 Kc.	5456 Kc.	6225 Kc.	6825 Kc.	7174 Kc.
2150 Kc.	5530 Kc.	6250 Kc.	6850 Kc.	7175 Kc.
2208.1 Kc.	5633.333 Kc.	6275 Kc.	6875 Kc.	7200 Kc.
2442.5 Kc.	5655.333 Kc.	6300 Kc.	6900 Kc.	7225 Kc.
2443 Kc.	5700 Kc.	6325 Kc.	6925 Kc.	7250 Kc.
2732 Kc.	5722.222 Kc.	6350 Kc.	6950 Kc.	7275 Kc.
2760 Kc.	5725 Kc.	6375 Kc.	6975 Kc.	7300 Kc.
2979 Kc.	5744 Kc.	6400 Kc.	7000 Kc.	7325 Kc.
2990 Kc.	5750 Kc.	6425 Kc.	7002.5 Kc.	7350 Kc.
3380 Kc.	5775 Kc.	6450 Kc.	7003 Kc.	7375 Kc.
3500 Kc.	5825 Kc.	6475 Kc.	7005 Kc.	7400 Kc.
3533 Kc.	5850 Kc.	6497.9 Kc.	7010 Kc.	7425 Kc.
3535 Kc.	5852.5 Kc.	6500 Kc.	7011.75 Kc.	7450 Kc.
3537 Kc.	5875 Kc.	6522.9 Kc.	7012 Kc.	7475 Kc.
3892 Kc.	5900 Kc.	6525 Kc.	7018 Kc.	7500 Kc.
3925 Kc.	5925 Kc.	6547.9 Kc.	7021.7 Kc.	7525 Kc.
4096 Kc.	5950 Kc.	6550 Kc.	7025 Kc.	7550 Kc.
4172 Kc.	5975 Kc.	6561.111 Kc.	7032 Kc.	7575 Kc.
4205 Kc.	6000 Kc.	6575 Kc.	7032.6 Kc.	7600 Kc.
4285 Kc.	6025 Kc.	6600 Kc.	7050 Kc.	7625 Kc.
4300 Kc.	6050 Kc.	6625 Kc.	7075 Kc.	7650 Kc.
4445 Kc.	6075 Kc.	6650 Kc.	7100 Kc.	7675 Kc.
4600 Kc.	6083.3 Kc.	6675 Kc.	7125 Kc.	7700 Kc.
4815 Kc.	6100 Kc.	6700 Kc.	7145 Kc.	7725 Kc.
4930 Kc.	6125 Kc.	6725 Kc.	7150 Kc.	7750 Kc.
5000 Kc.	6150 Kc.	6750 Kc.	7155 Kc.	7775 Kc.

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

EDITOR:

J. G. MARSLAND, VK3NY.

ASSOCIATE EDITOR:

R. W. HIGGINBOTHAM, VK3RN.

TECHNICAL EDITOR:

K. E. PINCOTT, VK3AFJ.

TECHNICAL STAFF:

J. C. DUNCAN, VK3VZ.

D. A. NORMAN, VK3UC.

R. S. FISHER, VK3OM.

A. E. MORRISON, VK4MA

ADVERTISING REPRESENTATIVE:

BEATRICE TOUZEAU,

96 Collins St., Melbourne, C.1.

Telephone: MF 4505

PRINTERS:

"RICHMOND CHRONICLE,"

Shakespeare St., Richmond, E.1.

Telephone: JB 2419.

MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," C.O.R. House, 191 Queen Street, Melbourne, C.1. on or before the 8th of each month.

Subscription rate in Australia is 12/- per annum, in advance (post paid) and A15/- in all other countries.

Wireless Institute of Australia
(Victorian Division) Rooms' Phone
Number is MY 1087.

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI: Sundays, 1100 hours EST, 7146 Kc. and 2000 hours EST 58 and 144 Mc. No frequency checks available from VK3WI. Intra-state working frequency, 7125 Kc.

VK3WI: Sundays, 1130 hours EST, simultaneously on 3573 and 7146 Kc., 57.5 and 146.25 Mc. Intra-state working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 3580 and 14342 Kc. 3580 Kc. channel is used from 0915 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK3MD and VK3WI by arrangements on all bands to 56 Mc.

VK6WI: Sundays, 0930 hours WAST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays, at 1000 hours EST, on 7146 Kc. and 2672 Kc. No frequency checks are available.

VK8WI: Sundays, 1000 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

Published by the Wireless Institute of Australia,
C.O.R. House, 191 Queen Street,
Melbourne, C.1.

EDITORIAL



UNITED WE STAND—ALONE WE FALL

The purpose of "Federation" is to ensure that the signatories to the agreement are able to work together in union, in order to withstand the attacks of a common enemy.

For the guidance of all a set of rules is laid down which ALL agree to abide by, until by mutual agreement rules which appear unworkable or outdated are removed or replaced by more acceptable rules.

In the case of the W.I.A. this power is entrusted to your Federal Council, after each Divisional Council has had an opportunity to fully discuss the proposed change. Differences which appear insuperable on paper usually vanish after representatives have had the opportunity of discussing them around the table at a Federal Convention.

From time to time there appears on the horizon some bush lawyer with a pet theory or an axe to grind. In some cases he conditions the minds of his local audience in the

traditional Hitler style until they are fully convinced he is right. Fortunately for the well being of the community as a whole common-sense prevails and the problem is brought to the conference table for a decision by the majority.

He who insists on creating a kingdom of his own, because he cannot agree to abide by the rules laid down by others, is like the master of a ship who insists on leaving the protection of the convoy because he doesn't like the rules or agrees with the decision regarding route to be followed. He eventually loses his ship either by enemy action or because owners wisely realise that he is needlessly hazarding his ship—hence the moral of our title.

Be wise, insist that your Delegate submit problems to Federal Council at the Convention in order to ensure continuity of the unity which is our strength.

FEDERAL EXECUTIVE

THE CONTENTS

The Monimatch	2	DX Activity by VK2QL	13
Monimatch, Mark II.	5	Prediction Chart for April, 1957 13	
A Home Made Three Bander ...	6	Fifty-Six Megacycles and Above 14	
C.D.E.N.	9	S.W.L. Section	15
A.O.C.P. Privileges for the Blind	9	YL Corner	15
Operation Olympus	10	Federal, QSL, and Divisional	
National Field Day, 1957, Re-		Notes	17
sults	12	W.I.A. Vic. Division Zones	18
Amateur Call Signs	12		

THE MONIMATCH[®]

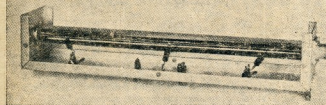
An Inexpensive S.W.R. and Power Indicator

BY LEWIS G. McCOY, W1ICP

IF you have had the opportunity to use a bridge or reflectometer of the type that can be permanently connected to the transmitter, even at inputs up to a kilowatt, you know what a handy instrument it is for tuning transmitters and adjusting antenna systems. It will not only show you when the load at the end of your transmission line is matched to the line, but will furnish a continuous indication of the match. It will also give a visual indication of your relative power output, which can be quite important when making tuning adjustments.

The "Monimatch" is an easy-to-build version of such a bridge, based on a design developed at the Naval Research

● Here it is—an s.w.r. bridge that can be left in the line with any Amateur transmitter, costs only pennies to make, and offers no constructional problems. We have called it the "Monimatch," to indicate its dual function of showing when a match is achieved during matching-network adjustments, and thereafter monitoring the line to make sure that nothing has gone out of adjustment. Make one and you'll find the major problems of matching and transmitter tuning are problems no longer.



● The essentials of the Monimatch are a few pieces of metal, a resistor, two diodes, and some fittings. Figs. 1 and 2 show the dimensions.

Laboratory. It is simply a section of transmission line to which a linear inductor is closely coupled. The combination of inductive and capacitive coupling is such that the incident component of r.f. voltage on the line is balanced out when the constants are properly chosen, leaving only the reflected component to actuate an r.f. voltmeter used as the indicator. The circuit of the Monimatch, shown in Fig. 1, combines two such bridge circuits back to back so that either the incident or reflected component may be read.

With this type of bridge or reflectometer the current flowing through the indicator circuit is a function of the operating frequency, so the circuit of Fig. 1 uses an adjustable resistor in series with the d.c. instrument to keep to readings in the desirable part of the meter scale. This avoids the necessity for adjusting the transmitter output to an "on-scale" level, but in turn precludes the possibility of an accurate s.w.r. calibration because the linearity of the rectifier-type r.f. voltmeter used as an indicator is too greatly affected by the amount of resistance in the d.c. circuit. It does not, however, affect the accuracy with which a good match between load and line will be indicated.

The dependence of voltmeter readings on frequency also makes a direct power calibration impracticable. But despite the fact that calibration in terms of either power or s.w.r. is not especially convenient (although not impossible), the instrument is nevertheless capable

of performing the really important functions of determining when a match exists, monitoring the match, and showing relative power output.

CONSTRUCTIONAL DETAILS

It is usually most satisfactory, for the majority of installations, to build the Monimatch in two units, the bridge itself and an indicator unit. A view of the bridge is given in the photograph, with additional constructional details shown in Fig. 2. This unit is built in a 12 x 24 x 2 inch aluminum slip-cover-type box with all parts mounted on the piece having one side and the two ends. The indicator section, which is not shown since there

is nothing particularly novel in its construction, can be mounted in an ordinary metal meter case. Such a case will provide sufficient room for the d.c. milliammeter or microammeter (whichever is used) together with the variable resistor and toggle switch shown in Fig. 1.

The transmission line section should have a characteristic impedance approximately equal to that of the actual line to be used with the device, but this point does not seem to be very critical. The construction shown works equally well with 50 and 75 ohm lines, and does not introduce a perceptible s.w.r. over the primary frequency range for which the Monimatch was designed, when inserted in a matched line. (The bridge is useful, incidentally, on both 50 and 144 Mc., the latter frequency being about the limit at which the line length in the instrument could be considered small enough compared with the wavelength.)

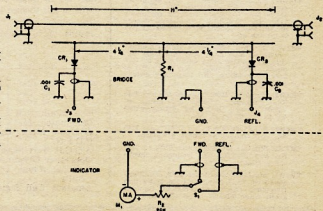
The line section consists of a metal trough with 3/8" sides for the outer conductor, and a length of 1/2" copper tubing centred in the trough as the inner conductor.

In the unit shown in the photograph, the first construction step was making the 3/8" diameter holes for the co-ax sockets in the ends of the box. These should be located as shown in Fig. 2. When the co-ax receptacle is mounted it extends approximately 1/4" inside the box; the trough fits around this protrusion when it is mounted in place.

The trough can be made either from thin aluminum or copper sheet, aluminum being used in the model shown here. It should be made 12 1/2" long and then cut back 1/4" at each end to make a 1/2" tab, as shown in Fig. 2 for holding the trough in place. The preferable method of mounting is to drill a hole in the tab and secure it with one of the screws that holds the co-ax fitting. This requires that the fitting be mounted with its sides making angles of 45 degrees with the edges of the box, as

Fig. 1.—Circuit diagram of the Monimatch.

- J1, J2—Co-ax receptacles, chassis mounting type.
- J3, J4—Insulated tip-jacks.
- R1—88 ohms, 1 watt, for 52 ohm line.
- R2—20,000 ohm potentiometer.
- S1—S.p.d.t. toggle.



* Reprinted from "QST," October, 1956.

shown in the drawing. An alternative is to use a short length of stiff wire, fastened under two of the screws, to clamp the tab to the fitting. (This is the method used in the unit pictured.) Before mounting the trough, the 1" copper tubing should be installed between the two inner conductor terminals of the co-ax fittings. The length of the tubing is approximately 11", and its ends are soldered to the co-ax fittings.

After the trough-line assembly is complete the next step is mounting the bridge wire, an 11" length of No. 14 gauge tinned wire. First, trim the leads on R1 to approximately 3". Solder one of these leads to a soldering lug mounted on the side of the box (about 1" from the edge) as shown in the photograph. Next mount the tie points which support the crystal diodes. They should be placed 2" from the ends of the box and 1" from the edge. Two short leads of shielded wire are used to connect each of the tie points to the insulated pin jacks, J3 and J4. The pin jacks may be mounted in any convenient location. The cathode leads of the diodes and the 0.001 μ F. disc capacitors can then be mounted in place on the tie points. When soldering a diode, hold the lead with a pair of pliers to conduct the heat away, since the heat of soldering can ruin a diode.

INDICATOR

The required sensitivity of the d.c. meter for the indicator will depend on the frequency band and the amount of power used. Typical current values are shown in Table 1. A 0-1 milliammeter is usable for power inputs over 100 watts. At 100 watts, the 0-1 instrument would not be sensitive enough to give a full-scale deflection on 160 and 80 metres (it takes about 200 watts at 3.5 Mc. for full scale), but it isn't actually necessary to have a full-scale deflection for impedance matching purposes. On the higher frequency bands the 0-1 milliammeter will be adequate even with 25 watts input.

If the power input is less than 50 watts and the bridge is to be used on 160 and 80 metres a 0-100 microammeter will be needed to obtain large enough readings for matching. Incidentally, don't worry about burning out a sensitive meter if high power is used. Naturally, caution should be used when

making adjustments, but it is only necessary to be sure that there is enough resistance in series with the meter before tuning on the transmitter. After power is applied the resistor can be adjusted, if desired, to give full scale deflection in the forward direction.

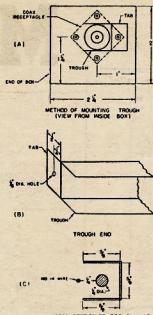


Fig. 2.—The drawing at A shows the method of mounting the trough to the end of the box. The trough is held in place by one of the screws that fastens the co-ax fitting to the box. Dimensions and constructional details of the trough ends are shown at B. A cross sectional view of the trough, inner conductor, and bridge wire is shown at C.

SETTING UP

A non-reactive load of the correct resistance to match the co-ax line is needed for the adjustment of the bridge. If you do not already have such a load or a dummy antenna of known resistance, a suitable dummy for 52 ohm co-ax can be made by connecting four 220 ohm 1 watt resistors in parallel, keeping the connecting leads just as short as possible. This will provide a 4 watt 55 ohm load, close enough to 52 ohms for the purpose. For 75 ohm co-ax, the load can consist of four 300 ohm 1 watt resistors in parallel.

Initial adjustments should be made on 28 Mc. Connect the transmitter to J1 and connect the dummy load (with short leads) between the inner conductor terminal of J2 and chassis

ground. Adjust the transmitter output to approximately four watts, taking care not to over heat the dummy load. If the transmitter does not have built-in provision for reducing power output to this level, the arrangement shown in Fig. 3 may be used. The 40 watt lamp in series with the bridge will limit the r.f. current to about the proper value at powers up to 50 watts or so, and for higher power a second lamp may be connected across the line as shown. The total lamp wattage should be approximately equal to the actual output of the transmitter.

Solder the centre of the 11" wire to the remaining lead from R1 and space it about 1" from the inner conductor of the trough line. The free lead of CR2 should be soldered to the wire approximately 4 1/2" from R1, as shown in Fig. 1. Before turning on the transmitter for the first test, make sure that the wire does not touch the inner conductor at any point. Then turn on the transmitter and check the reading on the meter. It should be very low or zero. If there is any meter indication, the diode lead should be unsoldered and moved a short distance one way or the other along the wire and the test tried again. When the point is found that gives a good null or zero reading, the bridge is in adjustment for reading reflected power.

Next, remove the bridge from the line and reverse the input and output connections; that is connect the cable from the transmitter to J2 and the dummy load to J1. Then solder CR1 to the bridge wire at the same distance from R1 as CR2, but on the opposite side. Follow the same procedure again, adjusting the position of CR1 for the lowest possible reading. The bridge is then ready for use.

If the bridge is going to be used on 6 or 2 metres and the power input is over 50 watts, the bridge wire should not be coupled as closely as described above. The proper distance will have to be found by experiment, but probably will not be more than 1/2" from the inner conductor.

USING THE MONIMATCH

If you use an antenna coupler or balun coils in your antenna system, the bridge should be inserted in the co-ax line between the transmitter and coupler or balun. If a low-pass filter is used for I.V.I. reduction, the bridge should be placed between the transmitter and the filter so harmonics generated in the diodes will not reach the antenna. The indicator unit can be placed in any convenient location. However, to avoid stray r.f. pick-up on the leads from the bridge to the indicator, the leads should be run in shielded wire.

(Continued on Page 13)

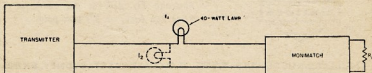


Fig. 3.—Shown above is a simple method of reducing the power output to prevent overheating the four-watt dummy load (R1). For transmitters of more than 50 watts output another lamp (L2), or lamps, should be shunted across the line to make the total lamp wattage equal the transmitter power output. If the transmitter has a drive control or some other method of reducing the output, the above system won't be needed.

Table 1

Typical values of rectified current with the indicator switched for forward reading. R2 at zero resistance, and the coupling wire spaced 1/4 inch from the inner conductor.

Band	10 Watts Output	50 Watts Output
1.8 Mc.	25 μ A.	100 μ A.
3.5 Mc.	72 μ A.	250 μ A.
7 Mc.	200 μ A.	1 ma.
14 Mc.	750 μ A.	Over 1 ma.
21 Mc.	Over 1 ma.	"
28 Mc.	"	"

An output power of slightly over 200 watts was required to obtain a reading of 1 Ma. on 3.5 Mc.

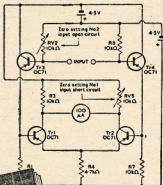
2

NEW PUBLICATIONS FROM

Mullard

only the top of the wedge is fluorescent, and then that too becomes cut off; the dot is the last part of the display to be extinguished.

When the bridge is balanced, there is zero input, the 'eye' is open and gives the full 'exclamation mark' display.



TRANSISTORS FOR THE EXPERIMENTER

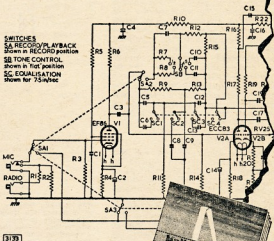
Contents include:

- Characteristics of Basic Circuits
- D.C. Stabilisation
- Germanium Diodes
- Phototransistors
- Transistor data
- Practical circuit diagrams and notes



Compiled from reports of Development Engineers of the Mullard Laboratories in England; these publications are issued in Australia by the Mullard Technical Service Department.

Both publications are available from the Mullard Distributors in your State or direct from Mullard-Australia Pty. Ltd. at the addresses listed below. Price 2/6 each, or 3/- post paid.



CIRCUITS FOR TAPE RECORDERS

Contents Include:

- Rudiments of Tape Recording
- Complete constructional details of a recording and playback amplifier and
- A recording playback unit intended to drive a High Quality Amplifier such as the Mullard "Five-Ten".
- A power supply unit for Tape Amplifiers.

MULLARD-AUSTRALIA PTY. LTD., 35-43 CLARENCE ST., SYDNEY, BX2006. 592 BOURKE ST., MELBOURNE, MU2366.
ASSOCIATED WITH MULLARD LIMITED, LONDON. MULLARD OVERSEAS LIMITED

MONIMATCH, MARK II.

An Improved Version of a Popular S.W.R. Monitor

BY LEWIS G. McCOY, W1ICP

MONIMATCH Mark II., the result of questions and suggestions from many builders of the original unit, has several features that represent improvements over the original design (see Page 2). For one thing, the size has been reduced to less than half. This is accomplished by using two short linear inductors, placed on opposite sides of the centre conductor of the line section, instead of a single long one. The box for housing the Mark II. is only 5 inches long, so the unit can more easily be fitted into a transmitter or antenna coupler.

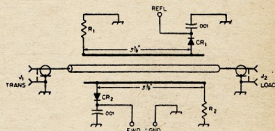
Another feature is the simplification of the construction work. In the original unit a U-shaped trough was used for the outer conductor of the line section. This required a metal-bending job. In experimenting to determine the necessity for using such a trough it was found that two flat strips of metal properly spaced from the inner conductor did an excellent job. In the Mark II., separation between the inner conductor and these strips is maintained at the proper value by two spacers made from insulating material. These spacers also serve the purpose of supporting the two bridge wires.

● Just as we were ready to go to press the February copy of "QST" arrived with this Mark II. version of the Monimatch, so with haste we included it with the original Monimatch. Here's a still better version—smaller and even easier to make. It uses the same indicator as the first model.—Ed. "A.R."

tioned as shown in the photograph. The inner conductor pin of the fitting should be tinned with solder and one end of the copper tubing slipped over it and soldered in place. Then the other fitting can likewise be tinned, mounted on the opposite end of the box, and the connection soldered.

Fig. 1.—Coupling circuit of the Monimatch Mark II. Strip conductors forming the outer conductor of the line section are not shown.

CR1, CR2—1N34A diodes.
J1, J2—Co-ax chassis receptacles.
R1, R2—See text.

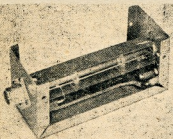


Next, the two strips used as the outer conductor can be installed. These are $\frac{1}{8}$ inch wide and $\frac{1}{2}$ inches long, and can be made from copper, brass, or even tin from a tin can. The method of mounting them in place is simple. Solder a soldering lug to each end, allowing the end of the lug having the screw hole to project beyond the edge. Bend this part of the lug at right angles to the strip. The top and bottom screws and nuts of the co-ax fittings are used to hold the strips in place. This, along with the insulating spacers, insures correct alignment of the strips with the inner conductor.

The bridge pick-up wires are 4 inches long and are made from No. 14 tinned wire. For a 50 ohm bridge, 150

ohm $\frac{1}{4}$ watt resistors are used for R1 and R2. For 75 ohms, 100 ohm $\frac{1}{4}$ watt resistors will do. Most important, the resistors should be carbon or composition, not wire wound. Many builders of the original unit were unable to get a null because they failed to use carbon resistors.

Standard one terminal tie points are used at each end of the box to hold the 1N34A diodes and the 0.001 μ F. disc ceramic capacitors. These and the pin jacks for the indicator leads can be mounted in place after completing the bridge assembly as described above. Next, solder a resistor to one end of each bridge pick-up wire, keeping the resistor lead as short as possible. The wires can then be placed in the slots in the spacers, after which the other resistor leads should be soldered to lugs



The smaller size of the Mark II. makes the unit suitable for mounting inside a transmitter or antenna coupler. As mentioned in the text, the outer conductor strips are held in place by soldering lugs mounted under the nuts of the co-ax fittings.

The indicator circuit of the revised bridge remains the same as in the original version. The description below is therefore confined to the bridge itself.

CONSTRUCTION

The Mark II. is mounted in a $2\frac{1}{2} \times 5$ inch aluminum box. The 5 inch dimension is the only critical one. Any available insulating material of reasonably low loss, such as polystyrene or bakelite, is suitable for the spacers. The dimensions of these pieces are given in Fig. 2.

When the spacers are completed they can be slipped over the inner conductor rod, which is a piece of $\frac{1}{8}$ inch o.d. copper tubing, $\frac{1}{2}$ inches long. One of the co-ax chassis fittings should be mounted on one end of the box, posi-

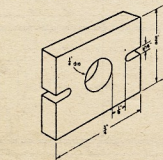


Fig. 2.—Dimensions of the insulating spacers used to hold bridge wires and outer conductor strips in place.

secured under mounting nuts at the adjacent co-ax fittings. The diodes are connected approximately $\frac{1}{8}$ inch from the opposite ends of the wires. This dimension is not critical.

Table 1 in the original unit gives typical values of rectified current with the indicator switched for forward reading. The figures for the Mark II. will be approximately the same.

The writer will be happy to hear from builders of this unit (as well as the original) who may have further suggestions for improvements. Who knows?—maybe we can have a Mark III!

CORRECTION TO CLAMP TUBE MODULATOR

There has possibly been some confusion due to the incorrect circuit diagram published with this article on page 7 (3rd column) of December, 1956, "Amateur Radio."

The matter has been clarified and we suggest you make the following corrections to the original drawing:

(1) Tie plate and screen of 6L6 together, making the modulator tube a triode.

(2) Reverse connections to switch in lead between 6L6 modulator "plate" and screen of final. The R3 and 2 μ F. capacitor should be shorted out for c.w. operation.

A Home Made Three Bander

BY F. H. HARLOCK,* VK6GU

THE writer first heard of the G4ZU beam when VS2BD presented him with a copy of "The Malaysian Radio Amateur," and he read the article (Vol. 4, No. 2, p.21) by G4ZU.

This article has been published in many other magazines, and this fact indicates the widespread interest in the beam.

It was learned that the basic principle involved in the use of shortened elements, inductance loaded at the centre, with electronic switching utilising resonant (quarter-wave) lengths of twin feeder to short out the inductances at certain frequencies.

A major step forward was the realisation that having found the physical length of a parasitic element at a certain frequency, the resonant frequency of a driven element of the same physical length must be determined. Having decided arbitrarily on 14.2 Mc. and 21.2 Mc., the length of a reflector for 14.2 Mc. was found to be 35' 4", and the resonant frequency of a driven element of this length using the formula $Lf = 475$, L being in feet and f in Mc. (which formula allows for end effect), is 13.44 Mc. Similarly the length of a director for 21.2 Mc. is 21' 6", and the resonant frequency of a driven element of this length is 22.09 Mc. These are the frequencies to which the reflector and director, respectively, were loaded.

As the writer was unable, at the time, to proceed with construction of his own beam, the prototype was built with and for VK6NF. One inch diameter split conduit was used for the elements, the lengths being eight feet aside for the director, 12 feet aside for the driven element, and 11' 6" aside for the reflector, the director and reflector being respectively five and seven feet from the driven element. A one-inch gap was left between the adjacent ends of each half element. Quarter wave switching sections (of 300 ohm tubular transmission line) were cut to the lengths required (allowing for velocity factor) for 21.2 Mc. and 28.3 Mc.

The three frequencies quoted, 14.2, 21.2 and 28.3 Mc. were chosen because they are frequently used by both VK6NF and the writer. They are also more or less in the middle of the most used parts of the three bands concerned.

These quarter wave sections were fastened to the inside ends of the reflector and director respectively, and were allowed to hang freely. Coils, approximately two inches in diameter, made of 12 gauge copper wire, were bolted to the inside ends of the reflector (8 turns used) and director (4 turns). Each coil is now in parallel with a quarter wave section, across the centre of a parasitic element.

The coils were spread or compressed until each element was found to be resonant at the required frequency (see above), using a grid dip meter coupled to the inductance at the centre. The tuning is quite critical.

● This article has been written in response to requests from many Amateurs contacted by the author when using the beam. It comprises a description of the G4ZU beam, as modified by the author, together with practical constructional and operational details, and includes a step by step description of all things done whether successful or otherwise. Unsuccessful experiments have a definite value, if only to save the time of others who endeavour to duplicate the construction.

At this point, explanation of the theory of operation is no doubt warranted.

On 10 metres, the system acts as a five-element beam, with the driven element working as two half-waves in phase. The reflector may be likened to two half-wave reflectors in phase. The effect of the quarter-wave section in the reflector, which is cut to suit a frequency of 21.2 Mc., is purely that of a small capacity between the elements, and the elements are effectively isolated from each other because of the impedance of the central loading coil. The director, which has an inductance and a quarter-wave switching section cut to the length required for 28.3 Mc., then becomes a single length because the quarter-wave section sets as an electronic short circuit across the inductance.

For the 15 metre band the driven element is an extended driven element. The director, which is centre loaded, has already been adjusted to the electrical length of a 21 Mc. director—the 28 Mc. section having no effect at this frequency. The quarter-wave switching section in the reflector electron-

ically short-circuits the central inductance, making the reflector effectively a single length.

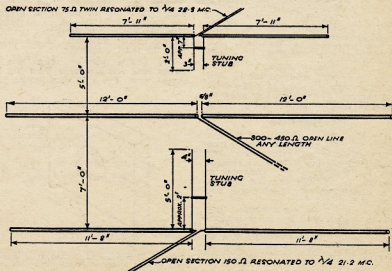
On 20 metres, there is a shortened driven element and a loaded reflector the quarter-wave 21 Mc. section having no effect at 14 Mc. The director has no material effect when the system is used on this band.

The antenna was fed from a parallel antenna tuning unit by means of 300 ohm transmission line made up to the required length, and was found to load well on all three bands. Experiments were conducted using 72 ohm co-axial cable as the quarter-wave section on the director, but the capacity was so high that it was necessary to reduce the number of turns of the loading inductor. This was not a practicable proposition, as somewhere between one-half and three-quarters of a turn was needed.

Reception only checks were made with the antenna only three (1) feet from the ground, and a very satisfactory front-to-back ratio was observed on fifteen metres. No findings could be recorded concerning 10 or 20 metres owing to lack of activity.

The prototype, in a very rough form and only three feet from the ground, was given a trial on 21 Mc. during one of the daily contacts between VK6NF and ZS5MP. A report of RS S7-8 was considered sufficiently encouraging to warrant dismantling the three stacked arrays and cutting the 20 metre "ZL Special" elements to the required length for the new beam.

Modifications introduced at this stage comprised increasing the space between the various half-elements, so that the loading coils could sit in between them (instead of being mounted slightly above) and substituting 300 ohm open line for the 300 ohm tubular switching sections; on the grounds that the lower inherent capacity of the open line



* 15 Lilly Street, South Fremantle, W.A.

would allow more turns in the loading coils, with probably higher efficiency.

THE SECOND BEAM

At this stage, with VK6NF obtaining excellent results on the 10 and 15 metre bands, but not very satisfactory results on 20 metres, mainly as far as front-to-back ratio was concerned, the author commenced construction of his own beam. This was made along similar lines, but with alteration to the physical lengths of both director and reflector. Allowance must be made, in determining the total length, for the spacing between the individual half-elements, as the overall length includes the spacing when the electronic switching, due to the quarter-wave section, is operative. Thus the length of each half of the director was made 7' 11" with a three-inch gap, giving a total of 16' 1" when on 10 metres. This figure was obtained from the "A.R.R.L. Antenna Handbook." For the reflector, each side was extended to 11' 8" with a four-inch gap, a total of 23' 8". The driven element was unchanged at 12 feet per side, with spacing to suit the 300 ohm ribbon feed line used.

With this antenna six feet from the ground, excellent results were obtained on 15 and 10 metres, and many good contacts over two to three thousand miles were enjoyed on 20 metres.

This beam was then mounted on a tower 60 feet high, and excellent results on all bands in the forward direction resulted, but there was poor front-to-back discrimination on 20 metres.

At this stage the major trouble was detuning of the loading inductors due to climatic conditions, etc., causing spreading or contraction of the individual turns. As operation of this antenna depends upon reasonably accurate tuning of elements, this detuning was detrimental to its efficiency.

USE OF TUNING STUBS

An alternate method of tuning was sought and the possibility of using tuning stubs was investigated. This method has long been used for tuning parasitic elements, and with the knowledge that the system has proved satisfactory in single-band arrays, experiments were begun.

Two sets of stubs were made of half-inch diameter duralumin tubing, the stub for the reflector being five feet long, spaced four inches between centres, and the stub for the director two feet long at three inch centres. Shorting bars were fitted, and opportunity was taken now to substitute 75 ohm twin transmission line for the director switching section, and 150 ohm twin for the reflector switching section.

These changes were made because it was found that, for the same frequency, the shorting bars could be moved nearer to the elements when higher capacity sections were used. As tuning was not as critical as when inductances were used, it was thought that the closer the shorting bar could be moved to the elements the better.

Checks with ZSSMP between the author using tuning stubs and VK6NF using inductances showed a considerably better signal from the stub-tuned antenna, whereas signals when both beams were inductance-loaded had been identical during some weeks.

IMPROVING FRONT-TO-BACK RATIO ON 20 METRES

Endeavours were now made to improve the front-to-back ratio on 20 metres, without unduly upsetting the excellent results being obtained on the other bands. Theory, in regard to the frequency to which the reflector was tuned, was abandoned, and a field strength meter was used to obtain maximum attenuation on the back of the beam.

The beam was excited at 14.2 Mc., and the shorting bar of the reflector tuning stub was adjusted for minimum field strength to the rear. It was now found that the resonant frequency of the reflector was higher than the 13.44 Mc. originally calculated. Tuning of the director for maximum forward gain on 21 Mc. was not attempted, because it is considered that the tuning is sufficiently broad for the theoretical frequency of 22 Mc. to be used.

Exact adjustment of the quarter-wave switching sections is of extreme importance. The author's recommendations are that they be placed in their intended position, but not connected to either element or tuning stubs. The ends to be connected to the elements should be spread to their final position, then joined together in a loop to enable the grid dip meter to be coupled for adjustment purposes. Care should be taken with the adjustment—cut off half an inch at a time. The old saying, "I've a cutter which will cut off but not one which will cut on," is still very true. When the section is cut to the right length, join each wire to the appropriate element and stub and forget it. The writer enclosed his sections in plastic tubing and sealed the ends.

The only other step in tuning the antenna is to adjust the shorting bars.

The tuning stubs on the writer's antenna are laid towards the centre of the tower for neatness. Any convenient disposition of them will be satisfactory.

An automatic antenna tuning unit was tried, but with the writer's lay-out (75 feet of open wire feeder to a parallel tuned circuit), was found to be unnecessary. VK6NF, on the other hand, uses an automatic tuning unit with satisfaction, but he is compelled by his location to use 130 feet of feeder.

SUMMARY OF CONSTRUCTION AND ADJUSTMENT PROCEDURE

1. Decide upon a frequency in each band—your most used frequency or a frequency near the middle of each band.
2. Determine the length of a reflector for the chosen frequency in the 14 Mc. band and from this calculate the frequency at which it would be resonant were it a driven element, allowing for end effect. Call this frequency "A". Determine the length of a director for the selected 21 Mc. band frequency, and calculate the resonant frequency of a driven element of this length (frequency "B").
3. Determine the length of a director for the selected 28 Mc. band frequency. From this length deduct the spacing to be used at the centre, halve the difference and cut two half-elements to this size.

Determine the length of a reflector for the chosen 21 Mc. band frequency, deduct the centre spacing and cut two half-elements as before. Cut two half elements each twelve feet long for the radiator.

4. The elements can now be mounted with the appropriate spacing (director five feet, and reflector seven feet, and reflector seven feet from the radiator).
5. Tuning stubs with shorting bars should now be made and attached to the reflector and director.
6. Cut a piece of 75 ohm twin transmission line slightly longer than a quarter-wave at the chosen 28 Mc. frequency. Put this line into its intended position, but do not connect it to the director. Couple to grid dip meter as described previously, and prune the remote end until it is resonant at the required frequency. Connect to director using the most direct connection possible.
7. Cut a piece of 150 ohm twin transmission line slightly longer than a quarter-wave at the chosen 21 Mc. band frequency. Position, adjust, and connect to the reflector as described under 6 above.
8. The feed line (of any convenient length) may now be connected to the driven element.
9. The director should now be adjusted, by means of the shorting bar for resonance at frequency "B" and the reflector to be resonated to frequency "A". Further adjustment may be necessary to the reflector later, but frequency "A" is a convenient starting point for the tuning procedure. Good coupling to the grid dip meter may be obtained by putting the g.d.m. coil in close proximity to the shorting bar. A decided "dip" can be observed with this coupling.
10. Excite the antenna at the chosen 14 Mc. band frequency and adjust the reflector tuning stub for maximum backward attenuation at this frequency, using a field strength meter.

The beam is now completed and ready for operation on the three bands. FB DX, OM! 73.

ACKNOWLEDGMENTS

The author wishes to thank the following friends for assistance in various ways. Some are mentioned by call sign in the text:

Mr. E. Powell, V82BD, and Mr. S. Faulkner, V82DB, for the original information.

Mr. R. Matthews, Z8SMF, and Mr. J. Herd, VK3JK, for checks and signal strength reports.

Mr. N. F. Odgers, VK6NF, for all the assistance as mentioned in the text.

Mr. E. C. Hodgson, VK6EH, for assistance in preparing the manuscript.

— . . . —

FRENCH TV SIGNALS HEARD IN SYDNEY

Norm Burton, of Revesby, N.S.W., seems to be making a habit of receiving overseas t.v. signals (see "A.R." March). On 7/2/57 Norm heard the French t.v. service sound channel on 41.25 Mc. The present sunspot conditions may lead to further reports of a similar nature.

MODEL "1XA" CRYSTAL MICROPHONE INSERT



AUSTRALIAN MADE — — FOR AUSTRALIAN CONDITIONS



FITTED WITH PLATED REAR SHIELD TO ELIMINATE HUM PICK-UP

- Patented crystal unit guarantees outstanding efficiency and performance.
- Protected against ingress of moisture with approved moisture sealed crystal element.
- Small — compact — lightweight — durable.
- Will not blast from close speaking.
- Precision engineering ensures realistic reproduction and high output with long life and dependable operation.

- The only unit available with a genuine sintered metal filter.
- Good high frequency response ensures excellent speech reproduction.
- Aluminium diaphragm mechanically protected and frequency controlled by "Zephyrifil" filter.
- Australian made throughout.
- Only carefully selected cements used throughout, to suit Australian climatic conditions.

TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyrifil" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

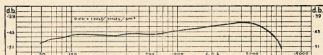
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), 5" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
Output Level = -45 db (0 db = 1 volt/dyne/cm²)
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

AVAILABLE FROM ALL LEADING TRADE HOUSES

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VIC.
Phone: BL 1300

C.D.E.N. NEWS

The Commonwealth Government is conducting a school for training Civil Defence personnel at Mount Macedon, Victoria. As part of its plan to obtain guidance from every section of the community it is through the agency of the State Governments, inviting representatives of Government Departments, Utilities, Fighting Services, Industry, Professions and Communication Services to attend short courses at the school for the purpose of learning about the proposed scheme and at the same time contributing their specialised knowledge towards the drafting of the final plan.

The Wireless Institute of Australia, as the recognised representative of Amateur Radio in this country, has been given the opportunity of sending representatives to the school.

In November, 1956, the President of the N.S.W. Division, Jim Corbin (VK2YC), was invited by the N.S.W. Government to go along with its team. On the same course, representing their respective Government Departments, were VK2ZC, VK4EF and VK4ES.

During February this year the Federal Co-ordinator of C.D.E.N., VK3AG, was invited by the Victorian Government to represent the Federal Executive of W.I.A. at the school, where he met ex-VK4L, Leo Feenaghty, who will be remembered by old timers for his good work in VK4 Division and production of "QTC," which was at that time the Institute's Official Magazine.

Chas Taylor, ex-VK2ALE, is one of the Instructors at the school and can be relied upon to see that all representatives of the W.I.A. on these courses receive the greatest assistance possible during their stay. Chas. has further offered to give up some of his own leisure to help our C.D.E.N. for which F.E. has already expressed your gratitude.

No person attending this school could possibly come away without appreciating the gravity of the situation in the event of a national disaster, the necessity for well planned Civil Defence and Emergency Organisation and the sincerity of the Commonwealth Government and the School Staff in their desire to achieve a worthwhile and successful plan.

It is hoped that each Division of the Institute will be given an opportunity to send a representative to the school in due course.

Several things have emerged from the above events.

- Divisional Co-ordinators must strive to expand activities and maintain a high level of interest.
- The necessity for pressing Licensing Authority for granting of Novice Licence, in order to obtain sufficient trainees for future requirements.
- The need for immediate introduction and constant use by all Amateurs of N.A.T.O. Phonetic Code.
- The importance of a full scale discussion on this subject at the Federal Convention.

Every member of the Institute who is proud of the Radio Amateurs' record of service in national and local calamities in the past should see that his Division's Delegate comes to the Federal Convention fully briefed.

Make sure that you see and study the plan which was forwarded by the Federal Executive to the Divisions many moons ago. If you disagree with any of the proposals laid down therein see that your Delegate comes along with a better one.

A.O.C.P. PRIVILEGES FOR THE BLIND

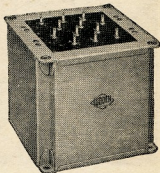
● The Wireless Telegraphy Regulations which govern the issue of Amateur Station Licences stipulate possession of certain technical qualifications, the minimum of which is either an Amateur Operator's Certificate of Proficiency or a "Limited" Certificate of the same class. This requirement is designed to ensure that Amateur Stations are operated only by competent persons and is necessary in order to avoid the interference to important radio communication services which could otherwise result.

However, in the case of a blind person or one who is unable to undertake the written examination because of a physical infirmity, authority may be given for the issue of a full privilege license which provides for radiotelegraphy and radiotelephony experimentation on all Amateur service frequency bands upon such a person demonstrating by oral test to the satisfaction of the P.M.G. Department his competency in the subjects of Theory and Regulations and his passing the prescribed morse code test of the relevant examination; success in the Theory and Regulation subjects alone would permit engagement in radiotelephony experiments in the Amateur service frequency bands from 144-148 Mc. and upwards.

In the event of the grant of an Amateur Station License to physically handicapped persons, the P.M.G. Department, recognising the hazards to which such persons may be exposed in contacting dangerous voltages are infinitely greater than is the case with those who have no physical disability, feels obliged to ensure that every protection is afforded them, for this reason, requires that the direct current plate power input to the final stages of transmitting equipment of Amateur Stations operated by such persons shall not exceed ten watts. Again for safety reasons it is a Departmental requirement that blind or otherwise incapacitated Amateur Station Licensees shall nominate other Amateur Station Licensees in possession of all faculties who are prepared to undertake equipment alterations and maintenance duties on their behalf.

**Leading Australian
Amateur Phone Stations
acclaim**

"WODEN" Modulation Transformers as the Best



- ★ Potted Type Compound Filled (Vacuum Impregnated).
- ★ Primary Z Range: 2,000 to 18,000 Ohms.
- ★ Secondary Z Range: 200 to 21,000 Ohms.
- ★ High Efficiency, with low weight per watt.
- ★ Above or below Chassis wiring.
- ★ Easy to Solder Heavy Silver Plated Tags.

TYPE UM1—30 WATT
£7/2/8

TYPE UM2—60 WATT
£10/13/2

TYPE UM3—125 WATT
£12/2/5

Please add Freight and
Cheque Exchange.

★

THE HOUSE OF QUALITY
PRODUCTS

★

WILLIAM WILLIS
& CO. PTY. LTD.
428 BOURKE ST., MELB'NE
Phone: MU 2426

OPERATION OLYMPUS

To Marcus Hurburgh, VK7MH, Hon. Secretary of the Tasmanian Division of the W.I.A., is due the credit of first suggesting the relay of a message of greetings by Amateur Radio from Greece to Australia on the occasion of the opening of the sixteenth Olympic Games in Melbourne in November, 1956.

It was appropriate that this message should be relayed via an Amateur Station near Mt. Olympus in Tasmania.

The proposal was discussed at a meeting of the Institute held early in

up to the last week that it would not be possible to obtain this permission and alternative arrangements were made to exchange personal greetings between the operators at the two stations in lieu of an official message if necessary. However, at the last minute, permission was received from the Administrations concerned.

In the mean time a preliminary visit to the Lake St. Clair area was made by VK7MH, VK7KA and VK7LJ, and the broad features of the operation determined. As mains power was avail-

able, the choice of the main transmitter was largely governed by ease of transport. Bill Watson, VK7YY (that "wiz-ard" on the key) offered the use of his compact 100 watt c.w.-phone transmitter and AR7 receiver. Ken Millen, VK7KA, provided a second AR7, while VK7LJ took his SX28 receiver and battery powered Type 3 Mk. II. outfit, the latter being held for emergencies in case of a power failure.

Ground plane aerials fed by co-axial cable were used for transmitting on 14 and 21 Mc., while long and not so long wires were used for receiving. Two complete stations were available for instant use throughout the schedule time.

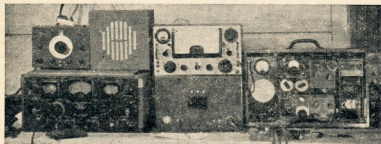
SVISV was contacted at approx. 0030 E.A.S.T. on 18th Nov. As the 21 Mc. signals were fading out, it was decided to go to 14 Mc. where contact was quickly established and the complete message was received direct. Signals from SVISV peaked at S7 and in general provided good copy. A tape recording was made of the message as it was received. An acknowledging message was sent to the Attica Amateur Radio Club at this time. The official message was relayed to VK3WI at 0030 for forwarding to the Games Committee in Melbourne.

Little is known of the set-up in Greece. However, it was apparent that there were several operators in attendance and it is possible that the message was transmitted from near the place of Olympia, as mentioned in the text of the message. At all events the Greek Amateurs did a magnificent job in meeting every schedule suggested and in putting a solid signal into Tasmania. A feature of the relay was the very ready co-operation which was so freely forthcoming from stations in all parts of the globe.

The party at Cynthia Bay consisted of VK7MH, VK7YY, VK7CH, VK7LJ, VK7KA, VK7BJ, VK7JO, VK7EJ, VK7BR, VK7DR, VK7FM, and Associates Grace, Tait, Shotten and Porthouse and friend D. Clark, who so kindly loaned the utility for transporting the gear. All did their share of the work—operating, cooking, erecting aerials, looking to the fire and assisting in a thousand and one ways.



VK7YY (Bill Watson) at the controls of VK7WI/7 at Lake St. Clair. 100 watt transmitter and AR7 (VK7YY), and spare AR7 (VK7KA).



VK7LJ at Lake St. Clair. VK7LJ's equipment: SX28 receiver, Geloso v.f.o./30 watt transmitter, and Type 3 Mk. II. transceiver.

1956 when it was unanimously decided to proceed with the project. A committee of two—VK7MH and VK7LJ—was appointed to undertake the necessary organisation. Federal Executive bestowed its blessing on the proposal and one of the committee's first functions was to secure the co-operation of the Attica Amateur Radio Club in Greece and to arrange for overseas stations to stand by in case of poor conditions preventing the direct contact with Greece that was so earnestly desired.

Co-operation was freely given everywhere. The A.R.R.L. were of immense assistance in providing liaison with Greece and in arranging for top ranking DX men in U.S.A. and Hawaii to stand by in case a relay was needed. The South African Radio League was anxious to assist. Difficulty was first experienced in obtaining the all important official permission to relay the "third party" message over international boundaries. It was feared right

Duralumin Aluminium Alloy Tubing for Radio Aerials

★ LIGHT ★ STRONG ★ NON-CORROSIVE

STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS— $\frac{1}{4}$ " TO 3"

RECOMMENDED FOR TELEVISION AND BEAM AERIALS

Price List on Request
STOCKISTS OF SHEETS—ALL SIZES AND GAUGES

GUNNERSSEN ALLEN METALS

PTY. LTD.

88-92 YARRA BANK ROAD, SOUTH MELBOURNE

Phone: MX 4624 (9 lines) Telegrams: "Metals," Melbourne.

RADIOTRON TELEVISION VALVE SERIES

The Radiotron 6BQ6GTB/6CU6 is a high permeance beam power valve designed especially for use in horizontal deflection amplifier service of television receivers. Design features include a mount structure which permits cool operation of both grids to guard against grid emission. The plate structure is such that heat is distributed evenly and not localised to form hot spots.

These factors, in conjunction with high design ratings enable this valve to deflect picture tubes having deflection angles up to 90 degrees.

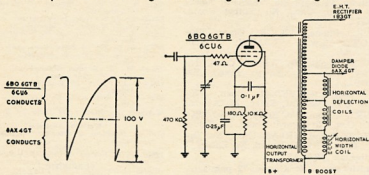


Figure 1

Figure 2

The horizontal sweep oscillator (Radiotron 6SN7GTA) provides a signal of roughly sawtooth form to the grid of the 6BQ6GTB/6CU6 (see Fig. 1). (Figure 2 is a typical circuit of a horizontal deflection amplifier.)

During the first half of the negative but positive going sawtooth, the valve is biased beyond cut-off (for this period, the 6AX4GT damper diode provides current to the deflection coils — see earlier article). As the input signal becomes less negative, the 6BQ6GTB/6CU6 commences to conduct. The output current is transformed through the horizontal output transformer into the deflection coils of the yoke to provide the second half of the sweep.

Due to the sawtooth form of the input signal, the peak current that is drawn by the plate may be 3.5 times the average current.

At the peak of the signal, which corresponds to the end of the horizontal sweep, the sudden negative pulse cuts the output valve off. This change in current through the output transformer, taking place during a few microseconds, results in a high peak voltage on the plate of the 68Q6GTB/6CU6. This valve is designed to withstand a peak positive pulse plate voltage of 6000 volts.

CHARACTERISTICS:

[illegible]

MAXIMUM RATINGS (Horizontal Deflection Amplifier)

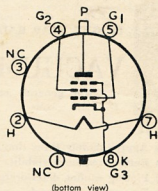
Direct Plate Voltage	.....	600V	600V	600V	600 volts
Peak Positive-Pulse Plate Voltage * (abs. max)	.....	600V	600V	600V	6000 volts
Peak Negative-Pulse Plate Voltage	.....	600V	600V	600V	1250 volts
Direct Grid No. 2 Voltage	.....	0V	0V	0V	200 volts
Peak Negative-Pulse Grid No. 1 Voltage	.....	600V	600V	600V	300 volts
Peak Cathode Current	.....	600V	600V	600V	400 mA
Wave Cathode Current	.....	600V	600V	600V	112.5 mA
Power Dissipation	.....	600V	600V	600V	11 watts
Grid No. 2 Input	.....	600V	600V	600V	2.1 watts

* The duration of the voltage must not exceed 15 per cent. of one horizontal scanning cycle. In a 625 line, 25 frame system, 15 per cent. of one horizontal scanning cycle is 10μ sec.

† For further information on the 63Q6GTB/6CU6 and other Radiotron Television Valves consult the Radiotron TVI Booklet. Additional copies of this advertisement are available free and post free on request.

**6BQ6GTB/6CU6**

SOCKET CONNECTIONS



- Pin 1 — No Connection
Pin 2 — Heater
Pin 3 — No Connection
Pin 4 — Grid No. 2
Pin 5 — Grid No. 1
Pin 7 — Heater
Pin 8 — Cathode, Grid No. 3
Cap. — Plate



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

47 YORK ST., SYDNEY

VC1/57

NATIONAL FIELD DAY, 1957

RESULTS

Portable

	Phone	Open	C.w.
VK2RS	203	—	—
VK2APF*	119	—	—
VK2AHA†	—	102	—
VK2AJO	50	—	—
VK2BW	38	—	—
VK3GE†	125	—	—
VK3LC	111	—	—
VK3ADW	—	97	12
VK3AHG	38	—	—
VK3ZM	—	32	—
VK3ZAT	25	—	—
VK3ZCG	17	—	—
VK4TN	183	—	—
VK4HZ	40	—	—
VK5QR‡	53	75	22
VK5EF	22	—	—
VK5LR	10	—	—
VK5XU	1	—	—
VK7KA§	—	43	—
VK7JO	—	78	—
VK9AU	—	31	—
VK9AS	24	—	—
VK9OQ	2	—	—

Multiple Operators:

- * VK2ATD
- † VK2XT
- ‡ VK3AN
- § VK5ZAX
- ¶ VK7LW

Fixed

	Phone	Open	C.w.
VK2ZS	16	—	—
VK3ARJ	43	—	—
VK3OJ	28	—	—
VK5AB	88	—	—
VK5JO	45	—	—
VK5RR	13	—	—
VK5DF	11	—	—

AWARDS

Outright: Phone—VK4TN, Open—VK2RS, C.w.—VK7KA, Fixed—VK5AB.

State: VK2—Phone, VK2APF; Open, No Award; C.w., No Entry; Fixed, VK2ZS.

VK3—Phone, VK3GE; Open, VK3ADW; C.w., VK3ADW; Fixed, VK3ARJ.

VK4—Phone, No Award; Open, No Entry; C.w., No Entry; Fixed, No Entry.

VK5—Phone, VK5QR; Open, VK5QR; C.w., VK5QR; Fixed, No Award.

VK7—Phone, No Entry; Open, VK7JO; C.w., No Award; Fixed, No Entry.

VK9—Phone, VK9AS; Open, No Entry; C.w., VK9AU; Fixed, No Entry.

Special: VK3ZAT.

Listeners: N. G. Clarke, 72 points. One log disqualified.

R.D. CONTEST, 1956

Corrected Score: VK5LB, 74 points.

AMATEUR CALL SIGNS

FOR MONTH OF JANUARY, 1957

NEW CALL SIGNS

VK—	New South Wales
2LJ—D. A. Crowley, 25 Glenview St., Greenwich.	
2NB—G. F. Barham, 10 Beaufort St., Northmead.	
2QJ—G. C. Jenkins, C/o. Radio Station 2VM, Moree.	
2ANB—R. J. Baty, 15 Lower Wycombe Rd., Neutral Bay.	
2ACR—R. W. Ritcher, 8 Arthur St., Fairlight Manly.	
2AUS—S. S. St. George, Broadcast Station 2VM, Moree.	
2ZBO—R. E. V. Crewe, 7 Raymond Rd., Neutral Bay.	
2ZJM—G. E. McPhee, 102 Woll St., Kingsgrove.	

Victoria

3LJ—D. R. Twigg, 33 Chapman Ave., Glenroy.	
3KF—E. B. Ferguson, 127 Cole St., Gardenvale.	
3MO—A. M. Owsat-Atkinson, 32 Heather St., Geelong West.	
3AGK—A. G. Kirmse, 19 Brunel St., Essendon.	
3AJY—J. W. Murray, 15 Edgevale Rd., Kew.	
3ARI—R. M. Tutton, Lot 66 Wentshead Rd., Glenroy.	
3ZCE—R. A. Low, 8 Airle Ave., East Prahran.	
3ZDA—C. A. Davey, 121 Mitchell St., Northcote.	
3ZCK—W. H. Harder, Station 3LK, Lubeck.	
4DJ—G. F. Pooley, 35 Aberdeen Ave., Maryborough.	
4MF—R. O. Britton, 42 Railway Ave., Townsville.	
4ZAP—B. R. Rickaby, 33 Babbidge St., Coopers Plains.	

Western Australia

6BR—B. R. Field, 5 Crocker Way, North Inland.	
---	--

Tasmania

7ZAC—R. W. Harrex, 33 Creek Rd., New Town.	
--	--

CORRECTION

Under the heading of new call signs ("A.R." March) VK3ZDK is shown. This is incorrect. The call sign should read VK3ZDX, which was allotted to R. C. Rutledge, 40 Lawson Parade, Hightst, S.21.

SPECIAL

BRIGHT STAR RADIO are pleased to announce an addition to their line of Crystals. We are now manufacturing—

VACUUM MOUNTED CRYSTALS

for general communication frequencies in the range 3 to 14 Mc.
Higher frequencies can be supplied.

ADVANTAGES OF THIS TYPE—

- (1) Approximately three times the activity of normal plated crystal due to the absence of air damping.
- (2) Better frequency stability due to the absence of air friction.
- (3) Plating cannot deteriorate with time and cause frequency shift.
- (4) Two or more crystals can be mounted in the one envelope and thus save space.

Price depends on the tolerance and frequency required, and will be quoted upon request.

BRIGHT STAR CRYSTALS may be obtained from the following Interstate firms: Messrs. A. E. Harrold, 123 Charlotte St., Brisbane; Gerard & Goodman Ltd., 192-196 Rundle St., Adelaide; A. G. Healing Ltd., 151 Pirie St., Adelaide; Atkins (W.A.) Ltd., 894 Hay St., Perth; Lawrence & Hanson Electrical Pty. Ltd., 56 Collins St., Hobart; Collins Radio, 409 Lonsdale St., Melbourne; Prices Radio, 5-6 Angel Place, Sydney.

BRIGHT STAR RADIO

46 EASTGATE ST., OAKLEIGH, S.E.12 UM 3387



DX ACTIVITY BY VK2QL†

QTH: OF INTEREST

HISIMQ—47 Jaward Road, Bangkok.
ZDAGW—F. & T. Dept., Bues, 5th. Camerons.
ZDAGL—P. & T. Dept., Jesselton.
FLAAB—Marine National, Djibouti.
BERSB—T. & S. Dept., BERSB.
VSABO—P.O. Box 300, Kuching.
KGICA—QSL via W3ZHL.

My thanks go to VKs 2AIR, 2AMB, 2OW, 4X, 5AB, 5RK (QSL), 5BT, & 5SRK to whom I hope to be back to normal next month, I hope.

THE MONIMATCH

(Continued from Page 3)

To check the accuracy of the impedance match in the system in use, first set S1 to read forward power, apply power, and set R2 for full scale reading, or at zero resistance if the power is insufficient to drive the pointer to full scale. Next, switch S1 to read reflected power. If the line is matched the meter will read zero. If the antenna system employs tuned feeders and a co-ax link antenna coupler the coupler should be adjusted so that the meter shows no reading, or as close to zero as possible.

With a co-ax fed antenna the matching system should be adjusted so that the reflected power is zero or as small as possible. While it has been emphasised many times in the past, the point is worth mentioning again—with such a system all matching adjustments must be made at the antenna. It is impossible to match a co-ax line to an antenna by making adjustments at the transmitter.

If you find that the indicator reads zero in the reflected power position when the transmitter is running continuously, indicating a matched line, but that there is a momentary "flick" of the needle when the transmitter is keyed, you can be fairly certain that there is a parasitic oscillation in the transmitter. Also if you find it impossible to get a reflected reading of zero, it may be because there is enough harmonic or subharmonic content in the transmitter output to cause a "residual" meter reading even with perfect matching at the fundamental frequency.

To use the bridge as an output indicator, switch S1 to read forward power and adjust R2 so the meter reads about half scale. Then tune the transmitter for maximum meter indication while holding the plate current to within the ratings for the amplifier tube or tubes. You'll notice when tuning a tetrode amplifier having a screen dropping resistor that the maximum output tuning point won't always be exactly the same as the point at which the plate current dips to minimum. Also, you may find that as you increase the amplifier loading the output doesn't increase correspondingly, and may even go through a maximum and then drop off as the input to the amplifier is increased. You'll probably also find that the power output is rather sensitive to grid excitation with a tetrode amplifier, and too much grid current is just as bad as too little. All of which adds up to the fact that an output indicator such as this gives you considerably more information than the plate current dip alone. Working together, the output indicator and the plate milliammeter will do a good job for you.

As was mentioned in last month's notes, I have now assumed from Hans, temporarily, the responsibility for compilation of the DX notes from reports which you DX'ers send in each month. The circumstances which bring this about are unfortunate, but we all hope that by taking his father back to Europe, that all will be well in regard to his health and that Hans will be back with us again.

Until such time as Hans does return, let's see if we can continue to improve the DX page. Due to the sudden change over, some of the usual contributors may find their reports are not included in this issue, but that is due entirely to circumstances, and that I have to compile the notes earlier than it was necessary for Hans to do. Please remember that "zero hour" is the last day of the month for your copy. By the time you read this issue, Hans will be on the other side of the globe.

My own DX activities this year will be restricted, so I will be dependent on the DX fraternity for reports. However, I will no longer be finding myself in another part of VK when compilation is due, so anything you send will not be wasted. The reason I gave up on return from VK4 was the possibility of not being home to compile the notes.

And now, although I am finding it hard to get into the swing once again, to business.

NEWS AND NOTES

VP8AO on Coats Land claims he will be a new country, but my opinion is he will be **Antarctica**, but just in case, don't pass him by.

JZ0FA, JZ0PB and JZ0PC advise they will be returning to England in May. If you need a contact, watch 21 Mc. around 1000z daily when VK5AB maintains a sked.

TT0KAB told W6NKR he has in **Tanna Tuva**.

UA0OM is located in **Inner Mongolia**, which is the 23rd zone (VK2AIR).

UA3DQ/MM is the Russian ship returning from the Antarctic base and apparently has the old ops. of UA1KAE on board as there are different ops. at UA1KAE now and the op. of the ship is Alex, one of those previously at UA1KAE (VK5RK).

There are three active stations on Christmas Island—VR3B, VR3F, and VR3G.

According to VQ8AB there will soon be a prominent station on **Comoro Island**.

AP2RH is expected to leave Pakistan in July.

CR4AS is active from **Cape Verdi**. (last four pars. from W6YY).

ACTIVITIES

8.5 Mc.: Nil.
7 Mc.: 2AMB reports VR2DA*, EA6AF*, HLICA, FKAL—201; G* (0730-0800z); UA-1KAE, UB, YU, ZS, CF3AG, BERS19S: West Europe, UA0KFG, YU, ZB8JY, ZK.

14 Mc. C.w.: 2AIR: VP6PL*, HK3*, FM7W*, SPDG*, ZK2AB*, VQ4EF*, VQ4AF*, CRBA*, KGICA*, ZC3AL*, RLIAC*, UA0OM*, FG7XC.

† Frank T. Hine, 30 Abbotsford Road, Homebush, N.S.W.
*Call sign and prefixes worked.
z—zero time—G.M.T.

FG7XE, FG7XK, 5A4TC, EA8BK, ZD3A, ZD9P, VR8CB, 5AMB: C80A1*, FM7W*, FM7W*, ZC3AL*, FB8Z*, LAB8C, VR3B*, FM7W*, VQ4AF*, LU8BA*, K0RUZ* (Truk), FG7XC, HK3TH, ZC3JM, ISRAM, CN8FJ, 9S4CH, ZD3A, AP2RH, VP7NI, KW8CB, ZK2AB, ZK1AT, VK0AB, VQ8GJ, FB8B, FB8B, OA4BP, VR3C, VQ4AF, 5OW, UA0*, KQB*, SK*, AA*, KJA*, KYB*, UA9VB*, UA8YB*, UA4PL*, UA0UP*, UB8UB*, UCBKAB*, UB-KAA*, VQ4AA*, UJBAA*, ZL4AF, VR3B*, VQ4BA*, AP2RH*, PJ2ME, HK5CR*, HK5BY*, SL1BD*, VQ8LQ*, ZC4IP*, VO3X*, LU9XA*, YJ1RF*, KJ6BS, 5QL: UR2AR, FM7W*, FM7W*, FY7Y*, ZK2AB, UJBKAA*, VR-RAO*, UJBKAA*, ZC3AL*, ZL5AA*, OY7ML*, VQ8GJ*, ZD9AE, VP7LU, IT4I, ET2US, PJ-1AP, KGICA, EA8DF, EA8AM, ISM1TC, VP8G, LX1W, SRK, UA3DQ/MM, GMS1TC, OA-4FM*, VK9AJ*, ISRAM*, UL7KRB*, ZC3JM*, FB8BD, FB8B, UA1KAE, KTUS, VQ8GF, VY8IL, YV5DE, YV5AE, TP7WEM, 5BT: ZC3JM*, BERS19S, at a mutual listening post, heard CR5AB, CE4AD, EA8AF, FQ8AF, PJ-1AV, UA3DQ/MM, CK8W, CK5UZ, KGICA, FY7RQ, ODLJ, VK0AB, VQ8GJ, ZK2AB, ZC3AL, VP6PL.

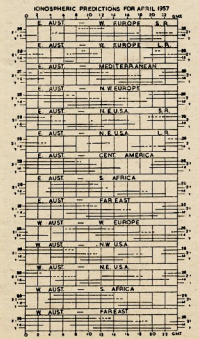
11 Mc. A.m.: 2AMB: FM7W*, OA4FA*, HZ1TA, CX2AX, VS4JT, VR3P, 5AB: KZ4IF, H51MQ*, West Europe, 4X4KH*, KC8SP*, ZL5AA*, VS4JT, ET8RL, HZ1TA*, ZB2P*, OGB8U, BERS19S, BZ2DY, K86AF, VR-31

21 Mc. C.w.: 5QL: W*, VE*, CR8AH*.

21 Mc. A.m.: 5AB: KZ5DX*, KZ3CP*, KZ-5IF*, ZS1D0*, JZ0PC*, JZ0PB*, KP4AZ*, UQ2AN*, SV1AB*, SV1AE*, West Europe*, CR8BB*, ODS4V*, 4X4FF*, 4X4UC*, 457MG*, VP8CH, VS4IT.

28 Mc. A.m.: 4XJ: W*, VE*, DL*, G, HC-1KV*, HP1LO*, VP1EE*, KL7BCS*, VU2RM*, OK1KT*, VS4BO.

QSL's enumerated saddened the hearts of 3AIR: HP1LO, VP3YG, VU2JA, OEBST, VR3B, XE1PJ, 5W8AA, UCBKAB, PJ2AN, 5AMB: OA8AF, OA4FA, YU2Z, SV8BS, XE1PJ, LU-4ES, LU3AL, LU8ZW, ZE1JV, EA3CB, EA3CK, EA1AM, PY4RO, LU4DFF, 5OW: KJ6BS, 5QL: 3W8AA, FB8B, YTB, GUCU*, UCBKAB. The QSL for GUCU* was from his car on 21 and 28 Mc. c.w. and phone, 10 watts to a whip on his bumper bar. 5HI: UA0AF, VS4NV, VK1KH, HRIEZ, YU4OB, BERS19S, CH5B, FLAAB, ISRAM, VK1RW, VR1C, Y3AN, ZD2GWS.



FIFTY-SIX MEGACYCLES ABOVE

NEW SOUTH WALES

VICTORIA

144 Mc. Two meetings have been held this year at the Group's new theatre at the Gore Hill Technical College, which has been much enjoyed by all who attended. The first was given to an introductory and informative talk by Max ZAP who described the equipment and the station buildings and their uses as well as the gear and the general technical equipment that would be made available to the Group at later dates. The business of the meeting was dispensed with to allow for technical questions and answers among members. Much discussion around queries relating to v.h.f. Amateur took place. A question raised by 2ANF caused a lot of interest among the members and a lot of answering by 2OT and 2OA to the enjoyment of those present, until at midnight the President 2APQ closed the meeting, suggesting that the discussions continue over the air from the various QTIS.

The second meeting saw quite a good attendance, the chief feature of the evening being a lecture by Leo ZKS, assisted by Horrie ZHL, with slides on the subject of v.h.f. communications as used in the Railways and Transport Departments. Everyone there now agrees that the use of v.h.f. for such purposes is essential. The lecture was interrupted by Per 2APQ to allow Harry 2AJZ to introduce KZOLM, James Morrisett, Associate Editor of the "Radio Start" magazine. Leo Ham expressed on behalf of his own V.h.f. Group back home their desire to correspond with VKs regarding any items or features which we need and they are commonly interested, and suggested that the m.a.f. conditions might soon allow contact between VK and ZL. After this brief interlude the lecture was continued by Leo and with supporting slides he described various types of receivers, transmitter, relays and antennae. A number of people thanked for his very helpful effort. Jim ZEDB who expressed the hope that we would soon again have the opportunity of further lectures by Leo.

Time was then given to introduce from the Amateur Astronomical Association a Mr. Gill Miles (who also has a call sign). He then explained how the astronomers propose to view the possibilities of v.h.f. for the future. He released from Florida early in July. He said it will be equipped with a tx of some milliwatts of power operating on the 144 Mc. band. In section on co-operation of the V.h.f. Group he is endeavouring to obtain at least one minute's notice of the satellite's approach to the moon. The satellite which is the view will not be for longer than seven seconds, so that at least one of the thirty observers who will be looking in their moonscopes will be successful in actually seeing the satellite. Any one interested in assisting the astronomers in this International Geophysical Year will be most welcome if they get in touch with Mr. Gill Miles or the Secretary at 42 Lincoln St., Belconnen.

By listening to the weekly v.h.f. broadcast at 7.30 p.m. each Sunday night you will hear the latest and up-to-date news on 2 mx from station 2W and the latest in the doings of the v.h.f. group. The Group's name has been changed to "The V.h.f. and T.v. Group of the N.S.W. Division". Once a month 2 mx of v.h.f. and T.v. is heard on the v.h.f. on Tuesday night nine days before the first Friday of the following month. Fix the date and join in the fun for the next one. 2ANQ who was first in the fun for 2APQ to Per 2AZP when he was first in at the one held on 27th Feb., 1957, when John and Ces planted 2AZO in the trees and 2AZP was the first to hear the v.h.f. 2ZCF and third place went to John 2ZAV. Nine cars participated in the event and a good time was had by all.

Adrian ZHE is busy arranging for suitable skeds with ZL and VK6 in an attempt to take the v.h.f. to the next level. He predicts and hopes that all interested in 2 mx DX will let him know when they would be available to make skeds.

At the general meeting of the W.I.A. on 22nd Feb., 1957, the evening's entertainment was handed over to the V.h.f. Group. Mr. Perc 2AZP, who gave the general principles and called on Bob 2OA to give a short talk on receivers and antennae, which was followed by another short lecture by 2AZN. Films were shown and the v.h.f. group was in conjunction with the Bushwalkers around Jenolan Caves area, inside and out.—2APM.

The most interesting piece of news for the past month was the creation of a new State record on the 144 Mc. band. On 18th Feb. Max 3ZCW of Cuyler, near the town of Launceston, a distance of 512 miles. This record will take some beating as the previous State record was made by a contact on the 20th March 3BW at Portarlington to Hugo 2WH at Forbes. Congratulations Max. It was a very excellent break-through all round and many very good contacts were made. On both 17th and 18th Feb. conditions were outstanding and the first VK5-VK7 contact was made when SCJ at Mt. Gambier worked TFF. Some of the Melbourne gang went away as many as Interstate stations on the one evening, namely SCJ, SCX, SZAM, TFF, TBQ and TLZ. There were break-throughs also reported as reception of Melbourne television. Reception ABV Channel 2, which has the frequency band 63 to 70 Mc., was reported from the vicinity of Brisbane and Col TLZ reported that reception received its first television show from HSV Channel 7 which has the frequency band 181 to 188 Mc.

The results of the V.h.f. Field Day which was held in conjunction with the National Field Day are given as follows: First and winner of the certificate was Ian 3ZCF portable Mt. Bunningy with 1831 points, including 1000 points on 144 Mc. and 3ZAD on Mt. Donna Buang (80 miles) on 144 Mc. 3ZAT on Arthur's Seat (70 miles) and 3ZEN at Nunawading (70 miles), both on 288 Mc. Second was 3ZG who was portable on Mt. Donna Buang with 1475 points including bonus points for longest contacts with 3ZCF (98 miles), 3ZAV (100 miles), 3ZAD (80 miles) and 3ZAT (80 miles) on 144 Mc. Third was 3ZAN portable on Pretty Sally Hill with 1312 points including bonus points for long distance contacts with 3ZAT at Arthur's Seat (58 miles) on 288 Mc.

There was an exceptionally poor attendance at the Fox Hunt held in February and as a result it was decided not to hold a hunt in March and April. The results of the Fox hunting were more interesting at the March v.h.f. meeting. The winner of this hunt was again 3ZG who had his mobile gear working very nicely. The final location was at the home of Ray and Nance Price where a post mortem and rag chew took place during the evening. Thanks to Nance for inviting the Group to your home.

For their February meeting approx. 40 members attended a visit to the television station HSV7. Mr. Potter of the HSV7 staff took the group over a tour of the studios and production equipment and the 2D prod. (ex-3ABT) and technical engineer of HSV7 then gave a talk on the equipment and answered questions. At the finish Geoff 3YJ made a very nice suggestion that we should, by way of a thank you to HSV7, take up a collection for their drive to buy television sets for the Children's Hospital and he himself started the collection off which amounted to somewhere in the region of £5, being formally presented on a television screen.

Don't forget the City-Country Gel-together of the v.h.f. Group to be held on April 17 when it is hoped that a large number of home-built t.v. equipment.—Phyl Moncur.

SOUTH AUSTRALIA

Main news of the v.h.f. gang here this month was the activity following the good conditions prevailing on 16th March. When most of us were alerted by the kindness of Ian 3ALZ. Many thanks for your telegram Ian, and that's all we heard about it for a while. Interesting: you certainly started something for all beams were directed to VK3 very smartly and some very interesting contacts were made. Didn't do so well for me, but didn't surprise anyone, the only outstanding item being that 3ZCW can write down that he has heard that it could have been a c.w. contact, but further, as it was better. Hughie 5BC made the grade with many contacts on 2 mx with VK3s and extended his range to 144 Mc. and 288 Mc. Hughie and then followed with contacts in VK3 and VK7. This was paralleled by Claude 3CH who in all had 144 contacts, about 350 m.m. some by their long distance. 3ZAG also worked up to 300 miles into VK3, so he is happy, whilst 3ZAM is still his active self and really working them, but Don 3TJ lets his beam as a bird carrier, step on it old man we want to hear you on again.

There have been quite a few queries recently regarding frequencies of various bands, so in order to help you identify those elusive carriers, and make work here, here is the list as recorded here, if there are any errors let's know—and we will correct:

VK—	Mc.	VK—	Mc.	VK—	Mc.
5GL	144.001	5MT	144.820	3PO	144.825
5GL	144.020	5MT	144.820	3ZL	144.830
5GL	144.020	5MT	144.820	3ZL	144.830
5GBR	144.020	5W	144.866	3ZCF	144.836
5QR	144.028	5ZAM	144.41	3ATF	144.837
5QR	144.028	5ZAM	144.41	3ATF	144.837
5RO	144.125	5CJ	144.005	3YN	144.72
5EN	144.125	5MK	144.50	3YNS	143.22
5SC	144.13	3TO	144.29	3BQ	145.40
5EN	144.13	3TO	144.29	3BQ	145.40
5RI	144.163	3ATN	144.43	2AMN	144.09
5AX	144.42	3RK	144.14	TFP	144.43
5ZAV	144.42	3ALZ	144.085	TLZ	144.62
3ZAC	144.16				

Ron SMT has stated "publicly" that he has designed and is making up a 64 el. beam on 2 mx to show us just how DX is really worked. Ray 3BT puts forward a suggestion for a horn type antenna for Mt. Lofy for use for anyone carrying to go portable there or to have it "back-to-back" excited to get those elusive signs over the hills. It would be an infit for the states who do not know our City's v.h.f. problem, we are at the foot of a high range, and Mt. Lofy, that is a remarkable screen eastwards.

Tom STL is now on 56 Mc. at Alice Springs with a beam directed south and looking for 3ZL and 3ZG. There are chaps and get Tom back on to the v.h.f.

Don 2AMN (yes, Broken Hill—but we grab him as a VK5er, being a member of our Division) is on 56 Mc. and looking for contacts. He uses half 12AT7 into half 12AT7, into 12AT7, to an 807, on 56 Mc. and by means of key in 12AT7, he is looking for contacts at will; good work Don, shoot a sig here and let's hear it. Advice still current re 3AGZ (Broken Hill) who fires to Adelaide on the 288 Mc. band. He is a member of the v.h.f. mag transmission on c.w. using 145 Mc. The band is simultaneously monitored so if you hear it call straight back, don't wait for a break in the transmission.

The f.m. and/or p.m. modulators referred to last month have eventuated with Reg 5QR having his complete and working, very good too on both 2 and 1 mx, and at 25 miles it's very good. 3ZG who has been working on 2 and a.m.—worth keeping in the back of the mind if your v.h.f. sigs upset hearing aids or the very old 3ZG who has been working on 2 mx with an 828B, a little strife with drive perps, but doing fine all the same.

Finally, and don't forget this please, advise me if you Box 44, and if you have an unusual break-through on 56 or 144 Mc., this information is being recorded now, so we need your help to be in the collection of such information useful to 3ZCF.

TASMANIA

We had always hoped but never actually thought 2 mx conditions could be as good as the 144 Mc. and 188 Mc. band. At first it seemed to be a good opening to the Melbourne area, quite a few stations being worked at good strength by TFF and TLZ. 3ALZ attempted to attack the 288 Mc. band, but couldn't break into the net. TFF was about to give it away when 3ATN turned his beam at 288 Mc. and reports were exchanged, this about 440 miles.

Signals from then on began to build up and 3ATN, who had QRT, was alerted by landline and came on to work TFF and TLZ. TLZ had already worked 3ATN, but didn't work 3ATN, then later until 2344 to work TFF at R5 56, then again at 0230 was 58 with TLZ. The distance to 3ZCF was 140 miles.

At 2318 TFF and 5CJ made the first 2 mx VK3-VK7 QSO, with R5 S8 reports. This was followed by a QSO with 3ZAM. TFF had to QRT at 0230 as he was out of the net. Full of strong signals, TLZ QRT at 0230 when signals were even stronger.

Col TLZ missed out on the VK3s because he had to go home at 0200. He had a good idea that the only station he has heard over the hill was 3ANQ, but unfortunately missed out on a QSO.

Conditions were still good on the night of the 18th, but the 3ZG who had a strong 2 mx worked 5CJ, but other than this no other new stations were worked. Nothing was heard of any VK3 or 5BC, who on c.w. in the distance would be heard. 3ZG put up with 3ZL. The inversion had gone by the 19th. 3ALZ only being worked that night. Because of QRM TLZ was unable to work 3ZG. 3ZG is considering going higher when he gets enough nerve to rub the crystal.—TFF.

S.W.L. SECTION*

This month we begin a new feature in this column, named "S.W.L. of the Month." To enable me to keep this feature interesting your assistance is needed. Drop me a line telling me all about yourself and your interests in radio and you may be featured in this capacity. Now to the "S.W.L. for April." If you look up the scores for the latest VKZL/VKZL Contest, you will find that Merri leading the Listeners' Section. Geoff who is 16½ years of age holds the Victorian Group number 10, and is one of four blind members of the Group. He has been listening for about 2½ years and in that time has gained the following awards: 1964 VKZL/VKZL Contest, 1st; 1965 VKZL/VKZL Contest, 1st; 1966 VKZL/VKZL Contest (the latest), 1st, with 1241 points scored.

His first receiver was the household radio-gram with no r.f. stage, but he now uses an Eddystone 750 with a three-bander W8JK beam 120, 15 and 10 m. erected by his father to suck in the r.f. An AIS may soon be added to the station set-up. Geoff is at present studying for his Leaving Certificate at Wesley College, Melbourne. He wasdux at the Victorian Institute School for the Blind four years in succession, and thus created a record. His log is kept in a book, and he also has several Braille publications on Amateur Radio obtained from the U.S.A. He listens mostly on Friday, Saturday and Sunday nights, but fits in a little time now and again during the week.

His other hobbies include record collecting, music, chess, and playing football and cricket with other old boys from the R.V.I.B. And last, but by no means least, Geoff is a staunch supporter of the Camberwell Football Club. (I wonder if he's as fanatical as Eric Trebilcock?)

By the way, let me know what you think of this feature, please.

INTERSTATE NEWS

Only one letter from VK3 this month, the writer being Barry Cartwright of Richmond, N.S.W. (Thanks for the letter Barry). He's been busy lately building a new rig covering 20, 15 and 11 m. and now hopes to really hear some DX. His next projects will probably be a preselector and a rotary beam. His cousin, Laurie Cartwright, who is waiting for a Z call to be issued, and ZAP are helping Barry when he strikes trouble. (Good luck to all and welcome to the club.)

VK3 Group Feb. Meeting.—This meeting took the form of a night of planning for our future programme. There were many good suggestions put forward so come along to meetings and learn all about the interesting events in store. (We meet on the last Tuesday of each month, 8 p.m. at the W.I. Rooms 191 Queen St., Melbourne.) At the March meeting George SWJ will have given a demonstration on a paddle-pot. We'll let you know next month how it went.

The April meeting will take the form of an Auction Night, so come along with all the pieces of junk you have and want to be rid of. Capacitors, valves, resistors of unknown value, odd chassis; bring them all along.

Agnes, who is the postman, we return to correspondence. Mr. W. R. Hempel, from 3 miles out of Kyabram, where local interference is a very real problem, writes a letter. He has just retired from the Air Force and taken up farming. A rhombic antenna and an SK71 take care of the signals for him. Phil Simpson, of the W.I. Rooms, was a member of the squadron radio club and has worked quite a deal of c.w. DX from the club station 5XGK. He hopes to have his ticket and be able to carry on operating before the end of this year. Let's hear more from you OM. I'll answer your letter as soon as I can.

The old faithful, Dave Jenkin, WIA-13039, from Orbst, is still managing to wield the pen with much vigour. He is still as keen as soldered yet. Just twisted together. Now he's going to double up on the 1's. In an endeavour to change the bloke's Selectivity, because the flat filter won't work. Keep plugging at it Dave, and we hope you fix it too. Dave, by the way, heard WAGB on 1 m. c.w. at the unusual time of 1652 hours G.M.T. recently.

VK3 Group.—From John Campbell we learn that Len's crashy rig is ready to be put in the Minutes Secretary. The Group have asked me to convey their thanks for a job well done and that they steps in to help. Len has now moved to 37 Thanet St., Brooklyn Park, South Aust., asks that all correspondence

be sent to that address, and that if it is intended for this column it be posted in time to reach him before the 26th of each month. John's new location is about 300 yards from the local A.B.C. station's transmitter and his antenna is a whip but he's having no trouble. He has a 30 ft pole to go up soon so he should be able to hear plenty when everything is properly arranged. The VK3 Group hope to have Gordon SKU come along to one of their meetings and talk on his recent trip to the Nullarbor Coast.

John also tells us that the South Australian Division will have a stand at the Royal Adelaide Exhibition at the Wymington grounds beginning on 3rd April. VK5W1 will be in operation on all bands and S.W.L. Group members will be there in the ways they can. Hope everything goes well for you chaps.

YL CORNER

BY PHIL MONCUE

Our YL for this month is Gwen Churchward, VK3US, YVL of Rex VK3VL. She is very tiny, well under 5 feet 10 inches, and has a very happy, friendly personality. She and Rex live at Leongatha, a country town in the south east of Victoria. Their home is located right on top of a hill, a wonderful location for a rotary beam, also a wonderful location for a rotary clothes line, a fact which along with radio has to be very much considered, for as Gwen is concerned as she has two quite small harmonics, Peter 3 years and baby Eric, and it's a case of signals on one rotary and lots of nappies on the other. However, with the help of Rex, who is very considerate and helpful, she manages to get on the rotary in the evenings, but this is the end of the story, let's go back to the beginning, somewhere towards the end of the 1930's.

In those days when they were both quite young they didn't have very much money to spend on radio, so they didn't have very much of anything apart from just loads of enthusiasm and one very important thing in common, they wanted to be together and they wanted to do the same thing together, and that thing was radio. They started off with their shack in an old fruit pickers' hut on the present father's property, then the shack and they got married and the old hut was converted into a five room dwelling so Gwen would be able to have a room of her own away in the Army and also it was a home for Rex to come to when he was on leave.

When the war was over, they both really started to get into radio and so they started their tickets. They studied together and took turns at sending and receiving c.w. to give practice to each other. To get practical experience Rex always let her do the building of their equipment, wiring up power supplies, modulation equipment, etc. The first rig she completely built herself and she was and she'll never forget the thrill she got when she turned it on and it worked first shot.

After the country's first big day and night for six months and then the big day came—the A.O.C.P. examination. This turned out to be a very happy occasion, as they both sat for it and Rex got through but she missed out and Rex just couldn't imagine what stumped her, she went through with flying colours in theory and in practice, but those gosh darn Regulations that let her down. She got 69 marks for them and would have only needed 70 to pass, and so she had one mark more than Rex with his licence and she didn't have hers. She had studied very hard at theory and c.w. that she just hadn't had time to spare on thorough study of the Regs. However, it was only a matter of time and the next exam she made sure of them.

The day the came home with his licence they had a real celebration, but perhaps not what everybody would consider as celebrating. What did they do? Why they hurried up and got tea up as quickly as they could and then rushed out and turned on the main switch so the could air that new call sign and they went fast to the boards till the early hours of the next morning, in fact till there just wasn't another signal on the bands to come back to them.

She has always enjoyed radio and anything to do with it and recalls the first Field Day she and Rex ever took. They have a car of course in those early days so it was a matter of pile up all the radio gear on the wheelbarrow and together they pushed it up on top of a hill where they erected a dipole on broom sticks. They have entered in lots

of Field Days and at one time they held the State record for a 6 metre contact, working from Mt. Buninyong to VK3PK at Mt. Buffalo with a little portable, a distance of just under 200 miles.

She has made a lot of good friends in W land; one, Lenore Conn, W6NAZ, she talks to two or three times a week when conditions are good and exchanges magazines with her, and another couple, also a husband and wife team, who they are good friends with, is Arlie Wally, and her husband, Roy W4YFO.

Before she had the children, Gwen used to work a lot of DX but now finds she can't spare so much time for DX but is happy just to be able to fit in time for 2 m contacts for which she uses a 522 and 4 over 4 beam and crystal locked converter. She and Rex also have equipment for 5, 10, 20 and 40 m.

At present with the help of their good friend Jim VK3DI they are building their home at Leongatha where they are living in the past that is already finished, but still have another two rooms to add to it. Of course the shack, which is detached from the house, was built very first thing, but then with such a "radio-active" family, you wouldn't expect anything else would you?

Low Drift Crystals

FOR

AMATEUR RADIO STATIONS

ACCURACY 0.02% OF
STATED FREQUENCY

3.5 Mc. and 7 Mc.

Unmounted £2 10 0

Mounted £3 0 0

12.5 and 14 Mc. Fundamental
Crystals, "Low Drift,"
Mounted only, £5.

THESE PRICES DO NOT
INCLUDE SALES TAX.

Spot Frequency Crystals
Prices on Application.

Regrinds £1/10/0

MAXWELL HOWDEN

15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA

HAMS! HAMS! HAMS!

Book your Order NOW! for the NEW 1957 EDITION

RADIO AMATEUR'S HANDBOOK

Published by The American Radio Relay League

PRICE: 46/3, plus Postage 2/-

AVAILABLE APRIL.

A MUST FOR ALL RADIO ENTHUSIASTS.

Order TODAY—Don't DELAY.

McGILL'S AUTHORISED NEWSAGENCY

Est. 1860

183-185 ELIZABETH STREET, MELBOURNE, C.1, VICTORIA

"The Post Office is opposite"

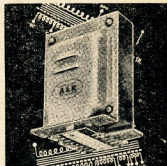
Phones: MY 1475-6-7

Top Quality A. & R. Power Transformers

The latest in its field! Built to a high standard, yet reasonably priced, this NEW range of Power Transformers has been carefully designed to conform with the existing high quality of other A. & R. Products.

Designed for use in amplifier and similar power supply equipment, these transformers are produced on the latest coil winding machines, in conjunction with new manufacturing techniques, and only tested and approved raw materials are used in their construction. As illustrated, all types are mounted in attractive vertical pressed steel covers, finished in A. & R.'s standard silver grey. Leads are terminated on clearly designated terminal boards.

Obtainable NOW from all A. & R. Distributors! Our Distributors will be pleased to supply data sheets detailing the A. & R. standard range.



DEPENDABILITY
PERFORMANCE
QUALITY
APPEARANCE

Type	1763	100 Ma. D.C.	Sec. Volts:	300-C.T.-300	Type	1776	175 Ma. D.C.	Sec. Volts:	285-C.T.-285
"	1764	" " "	" "	325-C.T.-325	"	1777	" " "	" "	325-C.T.-325
"	1765	" " "	" "	385-C.T.-385	"	1778	" " "	" "	350-C.T.-350
"	1766	125 " " "	" "	285-C.T.-285	"	1779	" " "	" "	385-C.T.-385
"	1767	" " "	" "	300-C.T.-300	"	1780	200 " " "	" "	350-C.T.-350
"	1768	" " "	" "	325-C.T.-325	"	1781	" " "	" "	400-C.T.-400
"	1769	" " "	" "	350-C.T.-350	"	1782	" " "	" "	450-C.T.-450
"	1770	" " "	" "	385-C.T.-385					
"	1771	150 " " "	" "	285-C.T.-285					
"	1772	" " "	" "	325-C.T.-325					
"	1773	" " "	" "	350-C.T.-350					
"	1774*	" " "	" "	350-C.T.-350					
"	1775	" " "	" "	385-C.T.-385					

*Includes 2.5 Volt filament W.D.G.

Types 1763 to 1782 Vertical Mountings with Terminal Boards. Type 1400 Horizontal; Type 1371 Vertical with Top Term. Board.

A. & R. ELECTRONIC EQUIPMENT CO. PTY. LTD.
378 ST. KILDA ROAD, MELBOURNE, VICTORIA

Victoria: Homecrafts P/L, J. H. Magrath & Co. P/L, Radio Parts P/L, Warburton Frankl, Motor Spares Ltd. Sth. Aust.: Gerard & Goodman Ltd., 196 Rundle St., Adelaide. Qld.: A. E. Harrold, 123 Charlotte St., Brisbane. Meas.: Chondlers P/L, Cr. Albert & Charlotte St., Brisbane. W. Aust.: A. J. Wyle P/L, 1094 Hay St., Perth. Tas.: Homecrafts P/L, 220 Elizabeth St., Hobart. N.S.W.: United Radio Distributors P/L, 175 Phillip St., Sydney; Homecrafts P/L, 100 Clarence St., Sydney.



Amateur Radio, April, 1957

Club members recently visited Jim 3ABT for an inspection of his gear. Jim is well known here for the painstaking care he puts into his constructional work. We were privileged to view a wide range of equipment which not only looks very professional, but also performs equally well. A 3 stage i.c. is monitored by a compact c.r.o. unit; freq. standards of 100 Kc. were obtained by a nice osc. unit. There were also converters for all bands in the course of construction. As well as running on a.c., the Ham station can run on batteries with vibrators and generators. A new Ham shack recently constructed makes operating a delight. Jim's wife, Con, and the ladies brought a very happy evening to a close with a fine supper.

Ron 3AYB gave us a most interesting talk of Earthing Systems and their application. See you at the Convention.

QUEENSLAND

BRISBANE AND DISTRICT

Maybe we're a little premature with this news but we just couldn't resist the temptation. You, no doubt, remember our part in the Junior Chamber of Commerce "Hobbies" Show; well, the J.C.'s. were so happy with the show that they are already planning the next show in November. Now here's the part we have been asked to play. The next "Hobbies" Show will be in the City Hall proper and the theme will be "International Understanding." It would be better if we quoted from the J.C. Secretary's letter: "We propose planning the Show around the Amateur Radio Hams who are best equipped to carry the theme into operation by world radio contacts." By the way, a proportion of the proceeds will go to that worthy cause, "The International House Appeal."

Band conditions have not been wonderful lately and the only occupants of 20 mx at night seem to be Ton 4TT, Del 4R, "Hon. Pres." 42M, and our far northern "agent-extraordinary" Norm 4NT. For associates who want slow morse copy, Norm has 5 w.p.m. transmissions every Wednesday night from 8 to 9 p.m. on 14342 Kc. or thereabouts. Norm at present has only planned to continue these weekly broadcasts until the April exam, but I know that he will continue after that date if he is asked nicely. We believe a special "thank you" goes to Bob Fitzsimmons for punching the key. Bob is an associate of the Division and your Secretary hopes it won't be long before we have Bob as a full member.

Council was disappointed at the lack of response to the appeal for members willing to

give assistance in emergency to have their names recorded in a list for Inspector Lloyd. All of a sudden names started rolling in with subs and now we can give Police Rescue and Intelligence a good size list. You can still send your name in to the Secretary, but be certain you include the name of the Police Officer in charge of your district.

We have some very good disposals gear coming up and the price will amaze you. We won't tell you what it is yet but when we have the gear safely in our hands, the full dose will appear in "QTC". Don't waste time getting your names in if you are interested because there will almost certainly be a ballot for it.

Our latest DX visitor, Bill Benton, W7QFY, has been and gone but we are still in a state of amazement at some of the gear he had, especially the cute little seven transistor portable. It was only about seven by three and a half by two inches, but it gave as much output as the normal portable on the market here in Australia. It got its "beats" from two torch cells. Now is the time to get the clues on these "gimmicks," so don't pass over the articles by Hans 3AHH, which are fairly regular in "A.R.". We have heard whisper that a big Ham equipment manufacturer in the States has a combination of receiver and 100 watt transmitter in the size of a normal receiver ready for release in the near future. It is just full of transistors.

The VK2 Division has had some special W.I.A. badge struck for fixture to cars and if anyone is interested a letter to the VK2 Division may bear fruit. This is the best way of identifying your vehicle as belonging to a member of the W.I.A. because we think it is almost impossible to persuade the State Government to grant us name plates with our call letters as they do in the States.

TOWNSVILLE

Quite a large roll up was experienced for the monthly meeting held on 28th February at Graham Walker's residence. Indeed it was quite encouraging to the club officers who have been disappointed at times when it is hard to get a quorum. John 4DD was welcomed as a new member and put forward quite a few suggestions to try and hold the members' interest. Just shows what new blood will do. As Graham had to leave the meeting early, it was decided to defer discussion on another class for the A.O.C.P. until the next meeting in the hope he will again be the class supervisor.

An idea for each Amateur to give a small lecture on some aspects of Amateur Radio in turn was enthusiastically received and John (Continued on Page 20)



OVERLOAD PROTECTION IS VITAL

Adjustable and Resettable

GLORAD KITS ARE NOW AVAILABLE

Ask for Number

2222.901— 50 to 100 Ma.

902—100 to 300 Ma.

903—300 to 1000 Ma.

Contact Capacity 5 Amps.

PRICE: 95/- plus tax

★

GLORAD ENGINEERING SERVICES

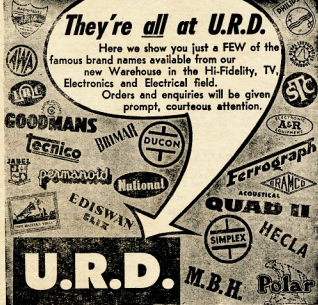
291a TOORONGA ROAD,
MALVERN, S.E.6, VIC.

Phone: BY 3774

They're all at U.R.D.

Here we show you just a FEW of the famous brand names available from our new Warehouse in the Hi-Fidelity, TV, Electronics and Electrical field.

Orders and enquiries will be given prompt, courteous attention.



UNITED RADIO DISTRIBUTORS PTY. LTD

175 PHILLIP STREET, SYDNEY. BL 3954. BOX 3456, G.P.O.

HOW ABOUT IT?

Are you an active member,
The kind that would be missed,
Or are you just contented
That your name is on the list?
Do you attend the meetings,
And mingle with the flock,
Or do you just stay away
And criticise and knock?
Do you ever go and visit
A member who is sick,
Or leave the work to just a few
And talk about the "clique"?
Come to the meeting often,
And help with hand and heart,
Don't be just a member,
But take an active part.
Think this over, Old Man,
For you know right from wrong—
Are you an active member,
Or do you just belong?

volunteered for the first night, to be followed in turn by 4LR and 4RW. The April meeting is to be set aside for discussion of troubles encountered.

Ted 4EJ and John 4DD haunting the 16 mhz band in working Britain, closely followed by Alan 4BE who comes up at times on 21 Mc. John 4DK finds it hard to make good times during lunch hour and work on 40 mhz. The dipole came up on 7 Mc. at 3 p.m. Bob 4MF awaiting modulation tranny, and Frank 4PF hopes to be on the air very soon. Ken, who calls work on 21 Mc. and 40 mhz. Bob 4RW cleaned up his modulation and now experiences difficulty in operating on 28 Mc. Andy 4BW can be relied on to come in and make the difference does a lot of listening and little talking. No word from any of the boys around Cairns. What about it someone? Don 4FW, who is on transfer to Collingwood, is expected to live on 4ZQ and get his signal on the air.

MARYBOROUGH

4DJ has worked 40 countries in his first two months on the air. Must have worn his tx out as he's building a new one. 4AI is putting a 6146 in the final in place of the pair of 6145s. 4EJ spent most of the building and de-bugging his new rig. The 40 ft. tower at 4BG went up without incident, with the help of the local lads. While building the new tower 4EJ had a lot of listening and future direction element as a dipole with good results. 4CB is still working to Brisbane on 3 metres.

.....

SOUTH AUSTRALIA

The last get-together was a dual affair starting with the Annual General Meeting and concluding with the monthly meeting. We really got formal at the start, and the meeting opened according to notices, agenda and business, with first class attendance. President John 5KX gave his report which was well presented and well received, and as it is likely to be published later on we won't repeat it here. Our membership is interesting, 222 full and 153 associate, total 380 (97 being country members) by the way. The President, Jim 5FO, that crafty scrooge, gave his report (as audited, he said), but I thought too little was made of the gains for the year. The Treasurer, Alan 5G, was not with them. We are very fortunate in the "watcher of our purse" and he is as hard to get money from as a certain gentleman is to say "yes" in U.S. dollars. The financial situation is buoyant and enough to prevent any thought of altering membership fees, and that's the talk we have.

The monthly meeting followed after a smoke-o and QSL card distribution, when such things as Federal Conventions, Exhibitions, etc., were discussed. We have one new full member, T. Drake (5DL), and two new associates, L. Mullins and R. Griese.

One very interesting point arising from correspondence was the information from VK1 that they had formed an Interference Committee, not necessarily t.v. or h.f., but to make enquiries into interference. I am sure generally. A very good thing that and a lead to other Divisions to follow suit, for quite apart from t.v. there is a growing demand for interference with assistance. This can provide, to help overcome the various "It" that crop up these days, not the least of which is to commercial h.f. sales.

It has been suggested that a different site be chosen for our next Annual Picnic, to add a bit of variety to life, so if any of you types have a suggestion, please let me know. The idea appears to think up something early to provide booking of such a place, etc., and to enable the "social club" to spring to action. Gordon 5BX suggested one of the most highly interesting talk on some of his experiences whilst at the "Caves," and as he has promised to do an article on it, will not repeat here.

Our T.V.I. Committee under the guidance of Ray Tuck, Chairman, is an active one and all up and down the country. Assistance is available to any member rebuilding or meeting trouble with their present rig. They really have the clues, so don't miss the opportunity to consult them. When you are in a bit of strife, and better still, don't complete your plans without letting them vet the ideas and this prevents trouble.

On the 21st this month was Joe NJO and his ride to Gawler on push bike to see the tri-band whilst it was down for modification. He was gone two hours and on the forward journey with an extra five minutes for the return. Real keen our Joe when he wants to see something—hope what you saw was worth the effort. OM.

The interest shown in the National Field Day this year was the best for some time and experiences gained will prompt greater activity next year. It is felt that more field days would be acceptable. The interest and keep the cobwebs off the gear meantime, so what about it, has anyone any suggestions? Such a thing would also improve our approach to C.D.E.N. and keep more gear ready for action. By the way, Doc 5MD was heard calling me at One Tree Hill when ported, just after I'd told someone (a think) that my 21 Mc. was under repair and was out of trees. He wanted to know how come?

The Exhibition project is progressing well, the tower is up due to the planning and muscles of Carl 5SS, Graham 5ZBT, Frank 5MZ and Gordon 5XU, and the ZL special under way by Joe 5JO. All sorts of activities going ahead in planning. The club has with special long, long days mentioned.

The Emergency Net Committee has produced a 12v. inverter, transceivers and have been tried out in the field using 5JK and 5MD as base stations. The experiments were done on vertical whips and different frequencies, and looks like being a good reliable net.

SOUTH EAST ZONE

Most of the activity in this zone was centred on h.f., which is accepted there, but in spite of that, the 5KU has his beam working on DX and doing quite nicely thank you. Stewart 5MS has managed to work two more new countries, although don't know at the moment what that brings his total to, but it must be hard to find new ones now Stewart, the score please some day. Bram 5AB still on his net, and has been heard on 21 Mc. mainly to his activity with the local bush net. 5JA still playing with his tx, whilst the rest of the boys really went to town on 2 mhz.

NORTH WEST ZONE

Yes 5WC have come out of hibernation and have reported to your scribe on some of their doings. The large number of technical masterpieces, W.B.E. and W.A.C. Certificates adorn the shack wall and they talk glibly about working some large numbers of stations. Not bad, indeed, and evidence that the rhombics still work. Burnie getting himself a "bomb" and intends going mobile, so we might hear about him again. The 5WZ. Wally 5DF reports from Port Lincoln that Jack 5LR spent a caravan holiday at Lincoln and managed quite a few contacts with portable gear whilst there. Geoff 5BZ, a new SRT, visitors to Lincoln recently on business (at Wally's sail mists), naturally paid 5DF a visit much to Wally's delight. Pat 5LT was working DX on 20 mhz with his usual success. Alf Mack still plodding on with more practice. George 5GA may find time to get back on the air this winter when it is expected that Wal 5DF's new tx may be far enough removed from the drawing board to connect to 50 cycles.

STOP PRESS

Who is this Phyl Moncur person, who in VL Corner ("A.R." March) mentions one of our precious VK3 types and his expanding staff? The KRN has been advised that the KRN fathers need support at such times. Learn to fold those squares in the form of vector diagrams and it won't seem like work any more.

WESTERN AUSTRALIA

The February Divisional meeting was the first of the year, no meeting having been held in January, and elections were held for Federal Council members. The following were elected: Federal Councillor, Bob Hugo (6KW) was re-elected unopposed.

Advisory Council proposed by the Institute was 6BE, 6BN, 6BM and 6BV. These recommendations have been accepted and appointed by the P.M.G. Department.

6WT gave an interesting lecture on television in the afternoon. He had a transmitter, illustrated his home-built t.v. receiver to the meeting. This is running most of the time on Channel 12 in Sydney and Melbourne in case of a break-through, it is built from disposals h.f. gear and showed what can be done with conventional equipment without any expense in the circuit or in the construction.

6BO, after receiving a telegram from 5ZAM reporting a major temperature inversion over Eastern Australia, kept watch together with 6BE and 6BK on 3 mhz from 1830 to 1900

W.A.S.T. in case of a break through, but nothing happened. However, we believe that a very high m.u.f. is expected during March and all v.h.f. enthusiasts will be watching the bands from 28 Mc. up.

TASMANIA

NORTH WESTERN ZONE

Did any of the active members take advantage of the fine display produced by the Aurora Australis recently? I haven't had any reports on what happened in the t.v. range but I didn't receive any TWI broadcast the following Sunday.

Caught up with associate Athol Lockett this month. Found Athol under the bonnet of a control dolly and thoroughly enjoyed himself. Can't we swipe one of the car transceivers Athol?

A very successful first tx hunt was held in the N.W. Zone on 10th February. The hidden tx was operated by Jim 7JO. The starting point was the War Memorial in Ulverstone. I arrived late with the XYL, 3 harmonics and no d.f. receiver, but such is fate. Three of our members were getting f.b. signs by going wrong but I was able to find the tx, collect an envelope as they came back. TDR was first to find Jim at the mouth of the Forth River, followed very closely by associate Max. Max had done the thing methodically, by taking a cross bearing and proceeding to the point of intersection, whilst Dennis TDR had followed his nose.

Haven't heard of anything of Chas 7CF as yet, although there's a whisper abroad we'll hear you again some day. Saw Johnny, a Devonport associate, at his place of toil, very busy with a spray gun at the time, but John told me he is also very busy with the A.C.F. course. Would like some help with his c.w. A job for the local boys there. Contrats to Leon 7JP and Trixie who had a visit to the Wireless Club early in March. A lovely little daughter 1 year old. 73 to Trix. I believe the Wireless Band on Bob Wilson recently too, but haven't got all the details. Best wishes to the XYL and babe, anyway Bob.

Saw associate Ken Browne in Burnie, outside a place of public entertainment, to see a picture theatre, during a Sunday. However, that was OK as Ken helps operate the projection machines. Visited the TWI tx during the annual meeting on Sunday. Had some trouble getting into the place too. Rang Len 7LE who told the operator of the day, Tom 7AL, over the air that a visitor as late as 10.30 was allowed. Good to hear thefulness of Ham Radio. Thanks, Tom, sorry I couldn't stay longer.—T.L.S.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th October, 1967, and must be accompanied by advertisement. Calculation of cost is based on an average of six words a line. Dealers advertisements not accepted in this column.

FOR SALE: Power Transformer 650 volts aside, 250 Ma., 6v. 4a. c.t., 5v. 3a. c.t., £6. M. Collins 18 Natimuk Road, Horsham, Vic.

FOR SALE: 16 mm. Movie Camera, Brevete France, 100 ft. loading, speeds 8 to 64 frames, F:2.5, in case with Falcet P.E.-1 Light Meter, cost £140, offered £60. accept or will exchange for good Com. Receiver of same value. Can deliver within 75m. radius of Geelong. 3 Philipst St. Geelong East, Vic.

SALE: 10 Metre f.b. Converter, voltage regulated power supply, £7/10/0. E. Blackmore, P.O. Sea Lake, Vic.

SELL: Edystone S860, price £110. 10 tube 50 Mc. Converter, £25. RF24 Converter £28 and £1.00. E.T. Kingsley 50 Mc. Converter, £15. 10 tube Receiver, tunes 80 to 150 Mc., £15. Hilliard, 57 Gardena St., Blackburn, Vic. (WX 2498).

Homecrafts

AMATEURS' BARGAIN CENTRE

DO IT YOURSELF!

We can supply the following components to add to your range of Test Equipment.

V.T.V.M. Cabinet and Chassis
80/- each plus tax.

V.T.V.M. Engraved Panel
25/- each plus tax.

V.T.V.M. Calibrated Meter
95/- each plus tax.

5" C.R.O. Cabinet and Chassis
105/- plus tax.

C.R.O. Engraved Panel
57/6 plus tax.

University Multimeter Kit,
complete, £12 plus tax.

University Battery Operated
Oscillator, £12 plus tax.

SPEAKER BOXES

6" Leatherette covered,	50/2 ea.
8" " "	55/- ea.
12" " "	73/11 ea.
5" Metal	31/8 ea.
6" " "	29/- ea.
8" " "	42/3 ea.
12" " "	50/8 ea.

Q PLUS COIL FORMERS

5/16" unshielded	5/- ea.
9/16" " "	5/- ea.
9/16" shielded	5/- ea.
Coil Dope	3/1 bottle
Jabel 3/4" Former	11d. ea.

STAR BARGAINS

METER BOXES

Finished in Black Crackle.

5 x 5 x 4 inch	13/8 ea.
9 x 7 x 2½ inch	16/9 ea.
7 x 6 x 4½ inch	15/- ea.
plus sales tax.	

COMMUNICATION CABINETS

Large, 10½ x 22 x 11 in., 76/3 ea.
Small, 7 x 15 x 8 inch, 53/- ea.
plus sales tax.

AMPLIFIER CABINETS

Large, 18 x 9 in., 68/8 plus s. tax.
Small, 12 x 7 in., 53/- plus s. tax.

CHASSIS PUNCH

	Hammer Type	Screw Type
1/2"	21/- ea.	20/- ea.
5/8"	21/- ea.	25/- ea.
3/4"	21/- ea.	26/4 ea.
1"	30/- ea.	39/4 ea.
1-3/16"	30/- ea.	43/4 ea.

SET OF STEEL DRAWERS

For those small components.
Available in 9 or 16 drawer
Models, 45/- each.

ALUMIN. CHASSIS BLANKS

5 x 3 x 2 inch	5/1 ea.
6 x 4 x 2 inch	5/9 ea.
8 x 5 x 2½ inch	7/9 ea.
10 x 6 x 2½ inch	9/3 ea.
11 x 8 x 2½ inch	11/1 ea.
13 x 7 x 2½ inch	11/1 ea.
13 x 10 x 2½ inch	13/9 ea.
17 x 8 x 3 inch	17/1 ea.
17 x 10 x 3 inch	19/- ea.
17 x 12 x 3 inch	20/7 ea.
plus sales tax.	

HOME CRAFTS FOR T.V. PARTS

* Aerials:

Antiference
Belling Lee
Channel Master
Astor

* Mounting Brackets, Masts,
and Insulators.

* Feeder Cable, Outlet Plugs
and Sockets.

* E.H.T. Assemblies.

* Power Transformers and
Chokes.

* I.F. Strip Assemblies.

* Turret Tuners.

* Frame Transformers.

* Deflection, Focus Assemblies.

* 17" and 21" Picture Tubes.

* Alignment Tools.

* 17" Mask.

EXPANDED ALUMINIUM

Obtainable in either 13" or 18"
width. Gold, 18/6 sq. ft.
Silver, 13/6 sq. ft.

DIAL LAMPS

6 volt M.B.C., 4/6 for 10.

PLANETARY DRIVES

Jabel 5:1 15/9 ea.
Scale for above 21/- ea.

ENAMEL WINDING WIRE

22, 24, 26, 28 gauge, 6/4 4 ozs.

290 LONSDALE STREET, MELBOURNE

FB 3711



A POWERFUL AMATEUR BAND TRANSMITTER...

This custom-built amateur band transmitter is built with the finest components available. A transmitter that packs plenty of power for DX operation.

THE "M.L.100"

- **POWER RATING :** 100 watts phone or C.W.
- **FREQUENCY RANGE :** 3.5 to 29.8 Mc/S in 5 bands
- **FREQUENCY CONTROL :** GELOSO V.F.O. or CRYSTAL CONTROL
- **POWER SUPPLY :** 200-240 V. A.C. power pack incorporated
- **EMISSION :** C.W. or A.M. phone (separate modulator available)
- **R.F. TUBE LINE UP :** V.F.O. - 6J5, 6AU6, 6L6, P.A. 2 x 6146
- **R.F. OUTPUT :** Pi-coupled to low impedance line

Further details
of the M.L.100
Transmitter
are available
from the
Australian
Factory
Representatives.



R. H. CUNNINGHAM PTY. LTD.

8 BROMHAM PLACE, RICHMOND, E.I. VIC.
16 ANGAS STREET, MEADOWBANK, N.S.W.

Phone: JB 1614
Phone: WY 0316